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SPECIAL REPORT: APPLE AFTER AMELIO

MacUser

OCTOBER 1997 www.macuser.com

Why Macs Rule

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The Best Macs for Every Need
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QuarkXPress 4.0: Our QuickStart guide takes you inside all the new features

Riven Revealed: Exclusive preview of the Myst sequel

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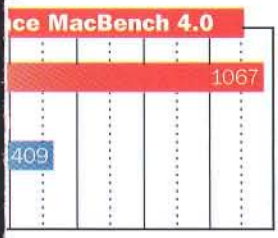

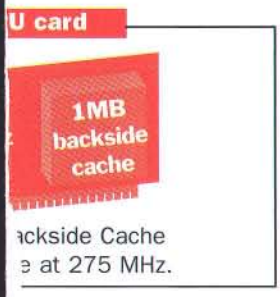

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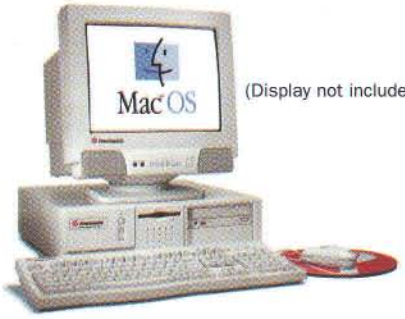

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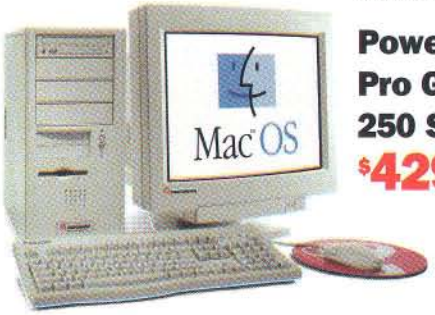

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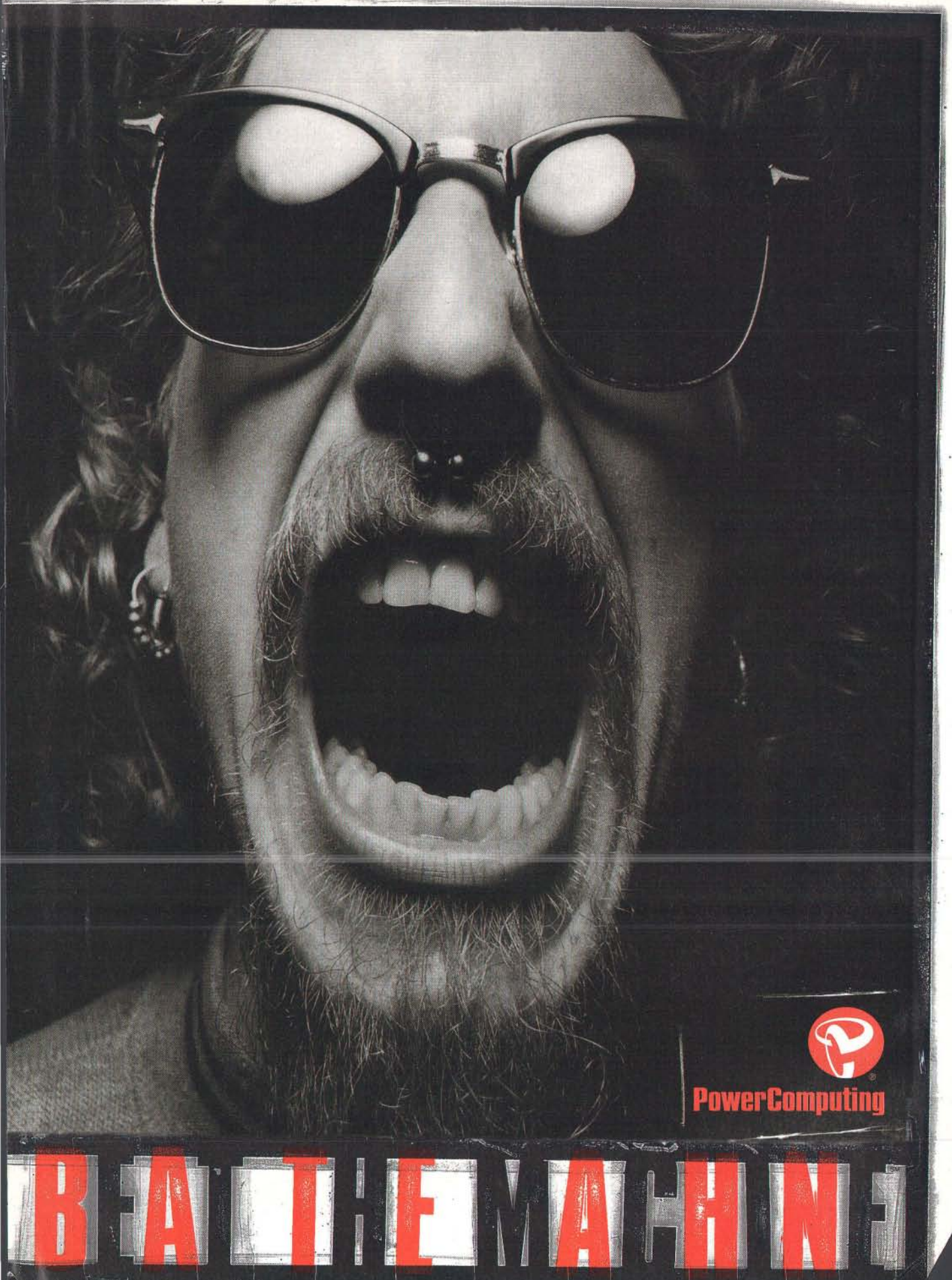
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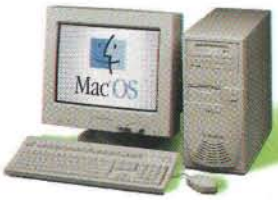

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MacUser

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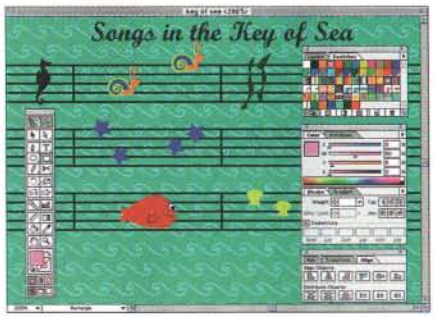

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If you're an HTML whiz, this powerful Web-site builder may not be for you.

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Low-cost photo fixer rescues your old snapshots from shoe-box purgatory.

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MacUser Labs Tested
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For one-click access to all Web sites mentioned in this issue, go to www.macuser.com/bookmarks

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Cover Photo Giampiero Benvenuti

Hands On

GraphicsUser

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NetUser

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Crash, Don't Burn · 91
Be prepared for the next time you see that unhappy Mac — because it will happen.

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Our answer to the "Car Talk" guys, Bob and Chris answer your questions on all things Mac.

MaxUser

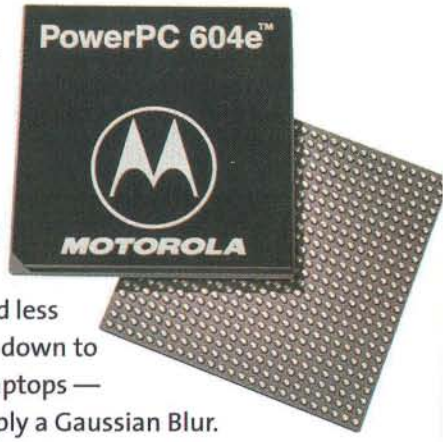
The Ultimate Gaming Mac · 146
Stop with the lame excuses already. Get our ultimate gaming setup, and blast your opponents away.

The Game Room · 150
Sporting with soccer, spanking your Norn, and satirizing *Star Wars*.

Features

Fast and Faster

New processors arrive on the scene to catapult your Mac to Warp Speed.



MacUser LABS

Two new, superfast PowerPC chips, dubbed the Mach 5 and the Arthur, blow the socks off current Mac OS system speeds. Coming soon to professional systems from Power Computing and Apple, these chips are smaller, less power-hungry, and less costly to manufacture. Expect them to filter down to midrange and entry-level systems — even laptops — quicker than these fast new systems can apply a Gaussian Blur.

By Henry Norr · 65

MacUser QuickStart

QuarkXPress 4.0

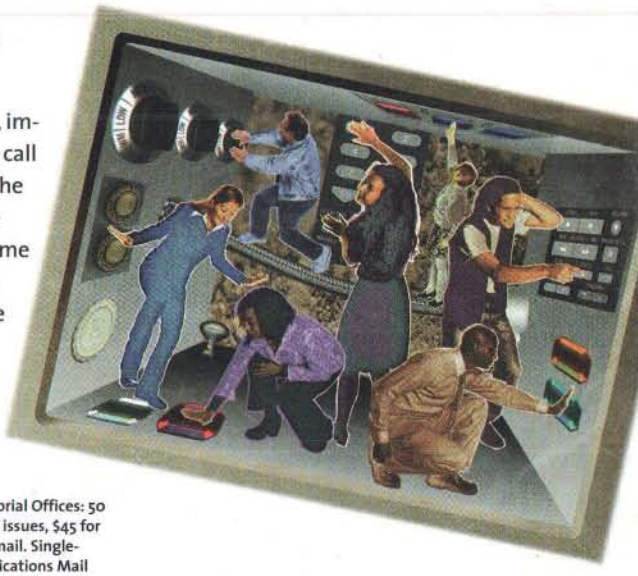
The QuarkXPress faithful must have a serious case of the seven-year itch. That's how long they've been waiting for an upgrade. Our QuickStart guide lets you know what's hot, what's new, and how to prepare for the Godot of application releases.

By Diane Burns · 70

Lights, Camera, Interaction

That magical mélange of sound, images, video, and interactivity we call *multimedia* is definitely where the Macintosh is at. Whether you're creating the latest computer-game sensation, promoting your company, or teaching children, we've got the lowdown for you on multimedia-authoring tools.

By Tony Bove · 76



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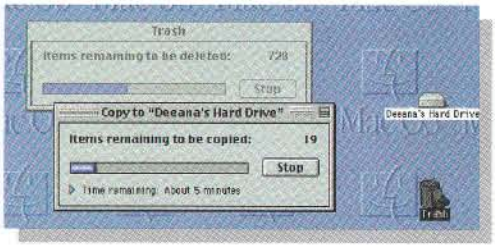

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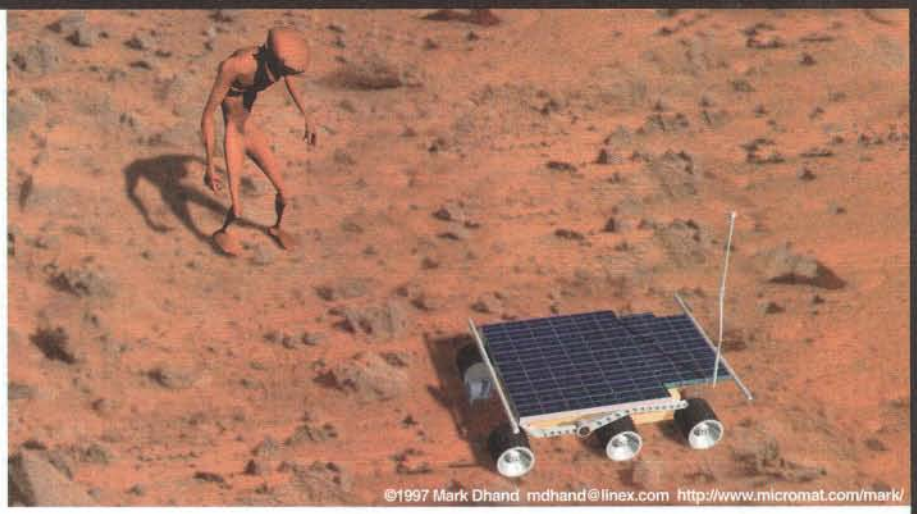

Alien technology. That's what the Macintosh seems to become when it isn't working properly. System bombs, freezes, sad Macs, crashes, SCSI problems and indecipherable error codes. Macintosh users face these and other potential invasions all the time. Sometimes the source of the problem is obvious, but most of the time it's not. That's why you need TechTool Pro, the Macintosh problem-solving utility from MicroMat Computer Systems. TechTool Pro goes light-years beyond cryptic diagnostic programs by providing interactive help in finding the cause of your Macintosh problem. And it doesn't just stop there. When TechTool Pro finds the failure it will tell you (in plain English) exactly how to eliminate the culprit for good. In some cases it will even fix the problem for you. But most importantly, you don't have to be a rocket scientist to use TechTool Pro. Just choose the tests you wish to perform and press the RUN button. TechTool Pro will do the rest. Don't know which tests to run? Use our convenient Auto-Pilot feature to conduct a comprehensive battery of tests on your entire system.

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Expo Expectoration

After experiencing the neon headiness of PC Expo in June, I thought I'd share a few thoughts about the Mac OS Expo bravely situated in the Belly of the Beast.

Ellen Hancock and the Mac OS 8/Rhapsody demos were terrific — nay, Rhapsodic! The overview of Rhapsody was more than enough to garner explosive applause from the battle-weary faithful. Although the flyby of Mac OS 8 was a tad reserved, it was informative and served its purpose. If what we saw becomes a deliverable, Apple will indeed shine again.

OK, that was the good news. The bad news was the absolutely pathetic I-wish-I-were-on-the-main-floor-with-the-big-boys, colorless, humorless, sloppy, who died?, no-attitude excuse of a nonevent called Mac OS Expo. Where was the excitement? Where was the music? Smiling people? Hey, look at this! Wow! Check the speed! Mac OS 8! Graphics! Multimedia! Enterprisewide solutions! Internet connectivity! PowerPC versus Pentium! Cost-of-ownership comparisons!

Give away some damn T-shirts at least!

Anthony Risicato, via the Internet

OpenStep in the Right Direction

Great August column ("Tools Time," August '97, page 17)! I hope Apple realizes that the battle isn't Rhapsody versus Windows NT but rather OpenStep versus J/Direct. Apple needs to pound into developers the cross-platform superiority of the Java-aware OpenStep APIs over the Windows-centric J/Direct APIs. I also hope Sun realizes that it might actually need Apple to win the battle.

Robert, genlee@som-uky.campus.mci.net

Communication Breakdown

UNIX is not to blame for the rise of e-mailian ("Character Assassination," August '97, page 19). UNIX can handle 8-bit data just fine. Most of the "problem" of e-mailian today resides on desktops where legacy mailers descended from closed systems have to handle Internet mail.

Bill Stewart-Cole, bill@scconsult.com

Off Tempo

In "Apple Picks Up the Tempo" (August '97, page 26), you state that Mac OS 8 runs on 68040 machines. If the Finder is PowerPC-native, how will it run on a 68040? Will we be forced to use an old Finder with a new OS? Please explain this.

Norman Sylvia, nsylvia@tiac.net

Illustration · Margaret McMullin

Please tell us if using a 68040 accelerator card with our Mac IIci (or any Macintosh with a PDS slot) will allow us to use Mac OS 8.

Samuel Leidy, via the Internet

The Finder in Mac OS 8 is written in high-level C++ and is compiled for both the 68040 and the PowerPC. Mac OS 8 will run only on systems that have a 68040 or better on the motherboard. If you swap your system's logic board with one that has a 68040 or better, you'll be able to run Mac OS 8. But if you're using an accelerator board with a 68030-based motherboard, you will not be able to run Mac OS 8. · JP

I think it's time to give the backward-compatibility flap a rest. Henry Bortman thinks it's a con of OS 8 that it won't run on 68000-, 68020-, and 68030-based Macs. I say move on to the future.

Lynn Cox, via the Internet

eMating Season

Your review of the Apple eMate 300 (August '97, page 34), although technically accurate, misses the mark. Like the original Mac and PowerBook — which were similarly flawed — the eMate literally represents a whole new class of computer. Who cares if it's underpowered and doesn't have a color screen? It's a "laptop lite" with sex appeal that is greater than the sum of its admittedly recycled parts. And it's Apple's most "insanely great" product since the original PowerBook.

Mike Beshara, beshara@flash.net

Open Folder

A young and devilish Mick Jagger once sang that "every cop is a criminal, and all the sinners, saints. As heads is tails, just call us *MacAbuser,* 'cause we're in need of some restraint." OK, he probably never actually sang it that way — not even when heavily drugged. But fans of rock-and-roll irony may be interested to hear that we champions of all things Mac have been unsympathetically characterized by several readers as the devil's own.

The advent of Mac OS clones (which reader Joe Allison cleverly calls "Macsimiles") has ushered in an era of multipolarity, making it hard to tell friend from foe anymore. As the Wintelligentsia continues to accuse us of gross Apple polishing, some in the Mac OS ranks charge us with going sour on Apple and mushy on the cloners. But even if we are Macdom's fallen angel, we're not without our worshipers. Don Cadwallader, with well-learned politesse, said that he greatly appreciates our layout, our format, and particularly our editorial/writing style.

Unfortunately, not all readers are as susceptible to our dark craft as Mr. Cadwallader, especially those who like neither Macs nor PCs. One such Amiga fan, Daniel Allsopp, gets our Wooden Stake Award for telling us pointedly to get a life and a decent OS and then calling us shortsighted [*blankers*]. Actually, he used a word that rhymes with *blankers* and is a popular term of disparagement in Britain. Hey, amigos, Mick Jagger doesn't play in a one-man band, and neither do we.

Feedback

I was perversely amused by your review of the eMate, as it was almost the antithesis of everything else I've heard about the product. No flashy color, sound, or games, huh? Gee, maybe the students could use the thing for *schoolwork*. I have to wonder just what it would take for your reviewer to consider something "adequately shockproof." And that he noted the eMate's battery life — which is some four to six *times* as long as that of top-of-the-line portables — only in an offhand remark about backlighting makes me wonder what constitutes an "effective teaching tool" in your reviewer's mind.

Scott Hunter, hunter@cs.cornell.edu

The one-sided avalanche of "You crazy!" letters excoriating our unfavorable review of the eMate 300 was unprecedented — you'd have thought we'd trashed Mother Teresa. Although we stand behind our assessment of the eMate 300 as an underpowered teaching tool with little software to recommend it, it's only fair to acknowledge that there's an army of folks out there who love it and love using it. And, by the way, our apologies for unfairly ridiculing the eMate 300 as first-generation Newton technology — about the only component it has in common with the original Newton is its ARM 710a processor. · RM

Obstructed PressView

Based on one of your articles, we bought a Radius PressView 21 SR monitor. We found it superior for color-matching final printed work and have purchased several since. Your "21-Inch Monitors" roundup (August '97, page 50) left out Radius, however, and I'm wondering why.

Paul Williams, via the Internet

We've reviewed the Radius PressView 21 SR twice (see review, February '96, page 33, and "Professional Color Monitors," September '96, page 74), and both times we found that its image quality is superior to that of any other 21-inch monitor on the market — including those in our August roundup. The Radius monitor remains unchanged from our prior two reviews. If you're shopping for a monitor for imaging work, where best quality is a necessity, the Radius PressView 21 can't be beat. · RL

Witness Projection

Thanks for your roundup including the Sony VPL-V500Q LCD projector ("Multimedia Projectors," July '97, page 58). There are a few issues I need to clarify about the projector and the review methodology.

Perhaps of most concern, the article does not state how much value was given to key features such as brightness, uniformity, price, and warranty — areas in which the VPL-V500Q performs well ahead of the rest of the group reviewed. In the LCD-projector market, brightness, uniformity, price, and warranty are four of what could be seen as the five key selling points by marketing and sales professionals. Unit form factor would be the fifth.

The VPL-V500Q comes with multiple color temperature settings to fix the "distinctive green cast" the author mentions, and it also has a dedicated S-video input.

Speaker volume and control are important, but they are not key buying criteria in the LCD-projector market. Still, they seem to be the factors that were given the most weight in the review.

Clint Hoffman, Marketing Manager
Sony Electronics

We placed the most emphasis on image quality, which includes brightness and uniformity. Since these are multimedia *projectors, sound quality is also important. And because most of these projectors are taken on the road, we also considered ease of use and warranty. · RL*

The Empire Gets Beaned

"Pentium II: The Empire Strikes Out" (August '97, page 61) was not objective at all, resulting in a pro-PowerPC bias.

You used only one application, Adobe Photoshop, which is heavily graphics-based. What about general applications? A comparison of the Pentium II with the PowerPC running Microsoft Word or Excel or even Adobe PageMaker may have shown very different results.

You set up the PCs with Windows 95, not Windows NT, claiming there was a problem running Photoshop on NT and that the fix wasn't available at press time. By running Windows 95, you essentially handcuffed the Pentium II chip, which is optimized for full 32-bit code. But alas, the Mac doesn't have a true preemptive, multitasking 32-bit OS, so perhaps you thought running Windows 95 against it was fair.

I look forward to your redoing the tests with NT and using a broad range of apps, not just a highly specialized one that exercises a small set of instructions.

Michael Chin, via the Internet

We ordered the Gateway systems configured with Windows 95, expecting to run the tests with the initial version of the Photoshop MMX plug-in. Adobe had discouraged us from using this version of the plug-in under NT, citing stability issues. Version 4.0.1 of the MMX plug-in, which addresses the stability issues associated with running Photoshop under NT, was released as we began testing. Although we were able to use the latest version of the plug-in, we weren't able to reconfigure the PCs for Windows NT, due to scheduling constraints. We've since retested the Pentium II, using NT, more RAM, and an updated version of Photoshop (see "Photoshop Shootout Revisited," elsewhere in this issue). Our initial article wasn't an exhaustive app-to-app cross-platform comparison. We focused on the audience of Mac Photoshop users who wondered what switching to the MMX-enabled version of Photoshop might buy them. Macs are still more expensive than PCs, but the PowerPC will continue to have the superior performance curve. · JM

A Weak Link

In Tip Number 47 of your "101 Expert Tips" (August '97, page 55), you say to choose relative — rather than absolute — links. I think I understand what you mean, but would you give an example?

A Loyal *MacUser* Reader, GHropvich@aol.com

Relative links refer to directories within a Web site. For example, if you want to link your home page to a detail page on your site, use `<a href="products/detail.html">` *rather than* `<a href="http://www.mysite.com/products/detail.html">`. *Relative links work as long as directory names and hierarchies don't change and as long as you're linking among pages on the same site. · JSA*

Ameliopropism

Is it true that *ameliorate* (a verb meaning to improve or make better) is based on Apple CEO Gil Amelio's proven ability to return troubled firms to profitability?

Gary Wern, Tucson, AZ

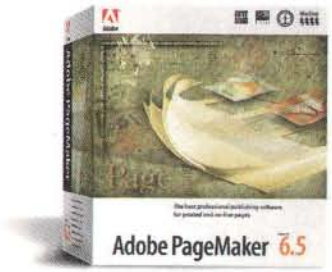
Corrections

The PowerPC processor code-named Mach 5 uses a new, improved version of the current .25µ manufacturing process ("New Chip Doubles Mac Speed," September '97, page 29).

The phone number for Thursby Software Systems, maker of DAVE for the Mac 1.0.1 (see review, August '97, page 44), is 817-478-5070.

The correct MacBench 4.0 Processor score for the Motorola StarMax 5000/300 is 441 ("MacUser Report Cards: Mac OS Systems," August '97, page 48).

All multimedia animal titles by Inroads Interactive ("The Pet Shop," August '97, page 149) are $19.95 when ordered direct from Inroads.



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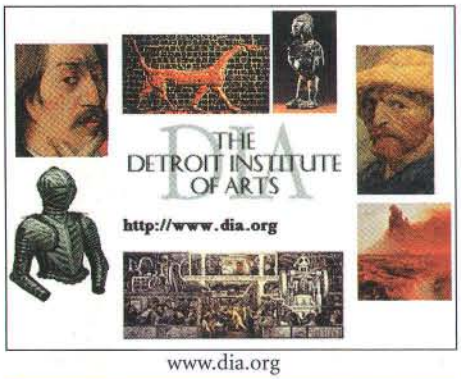

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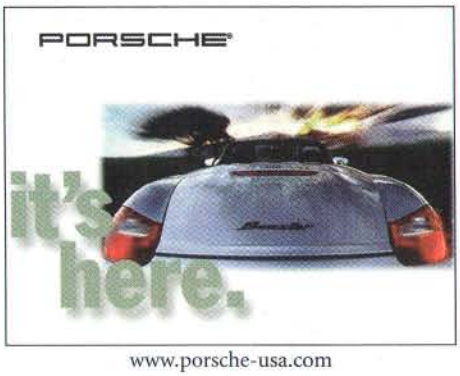

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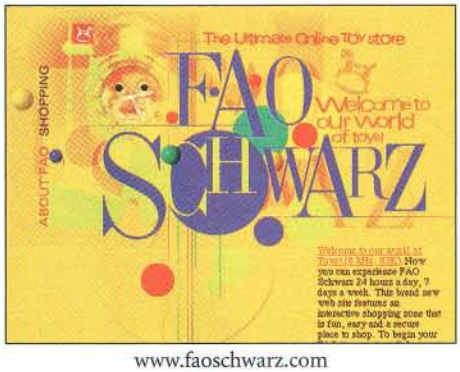

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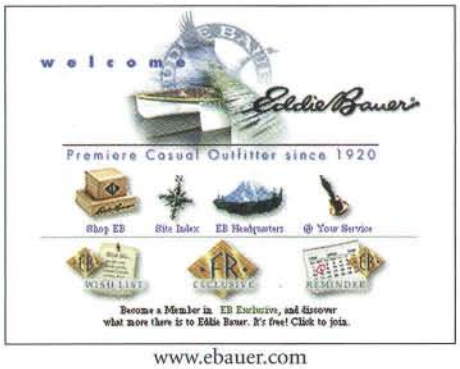

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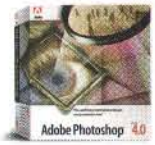

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The Doctor Is Out and Then Some
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By Pamela Pfiffner
pam@macuser.com

Why Macs Rule

Forget who's leaving Apple; look where Apple's leading

I'M *NOT* WRITING about this summer's executive putsch at Apple Computer. By the time you read this, you'll already have seen gazillions of opinions about it — including, I hope, my own, which was posted online minutes after the resignation was announced. Who knows? There might even be a new person at the helm down Cupertino way. After all, soap operas, even the ones that transpire in the hallowed halls of Apple Computer, are all pretty much the same — lots of drama, lots of plot twists, lots of absurd situations, and over in an hour — including commercials.

So, instead of rehashing boardroom intrigues, I've decided to talk about something much more forward-looking: Why Macs Rule. More than just a catchy cover line, it's really true. When I sat down to look over this month's collage of *MacUser* stories, I realized that a theme was emerging: The Mac is really starting to lead again — in several critical areas.

And Now a Word from Our Processor

This issue of *MacUser* shows exactly why I believe that the Macintosh will be around for a long time. Despite the turmoil at the top, Apple has gotten its hardware and software back on track, thanks to the earlier efforts of Ellen Hancock (whose contribution to this turnaround is badly underestimated, in my opinion) and more recently those of Avie Tevanian and Jon Rubinstein. Last month we showed you Mac OS 8 — a significant upgrade to the Mac operating system. This month, we switch to the hardware front:

The First We tested the first Mac based on the Common Hardware Reference Platform (CHRP), and we believe that this fast, reasonably priced Mac from Motorola represents a turning point in the Mac OS market. Motorola's StarMax Pro 6000 is the first Mac on the market to have been designed completely independently of Apple, a watershed event parallel to the PC market's liberation from IBM. CHRP is critical to the Mac's evolution from an expensive closed system to a competitively priced one that uses industry-standard parts. In the coming months, expect to see more technological innovation in CHRP machines from many vendors — more speed and more options.

The Fastest By now it's old news that speed tests show the Mac's PowerPC architecture to be superior to that offered on Wintel PCs. The real news is that the next wave of PowerPC processors — the newly renovated 604e, code-named Mach 5, and the brand-new G3 chip, currently dubbed the Arthur — make their predecessors look like windup toys. The new 604e's miniaturized design lets it run at much higher speeds — 350 MHz and faster — and offer support for multiprocessing. We tested four new systems from Apple based on this next-generation 604e, and you'll have to see the results to believe them.

Even more exciting is the Power Computing G3 system we tested. The G3 represents the next generation in PowerPC processors, and it performs at warp speed. In fact, the PowerTower Pro G3/275 is the first Mac ever to earn a four-digit score in our MacBench Processor speed test. Expect the G3, which you'll also find in the aforementioned Motorola CHRP machine, to show up in a variety of Macs — including laptops — in the coming months.

The Most Want to know a tangible benefit of Apple's licensing program? Just look at the sheer number of Mac OS systems users have to choose from today. I remember when I could count the currently shipping Mac lineup on one hand. Today there are more than 70, and MacUser Labs tested every one of them for our "Which Mac?" CPU shootout. The result is the most comprehensive guide to current Mac OS systems found anywhere. In addition to giving you the processor speed, mouse rating, and price, we've picked the top machine in three categories — high-end, midrange, and budget. That a different vendor won in each category underscores that there are a lot of strong players out there among Mac OS licensees — it's not just one company's marketplace anymore.

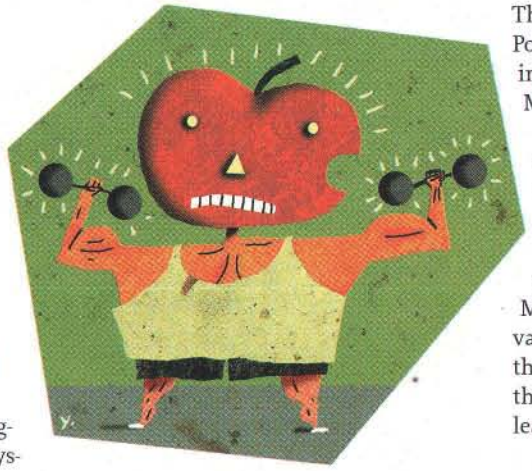


Illustration · James Yang

And Now, Back to Our Program

These developments — CHRP, new PowerPC processors, and Mac OS licensing — bolster my confidence that the Mac has staying power.

But I won't kid you. The road ahead will be rough. If Apple wants a chance to build on these successes, it must execute its strategy flawlessly. It must treat its business partners well — software and hardware developers as well as Mac OS licensees. It must continue innovating. It must have aggressive marketing that leverages its brand and thinks "out of the box." The key to all this is to find a leader with a bold vision.

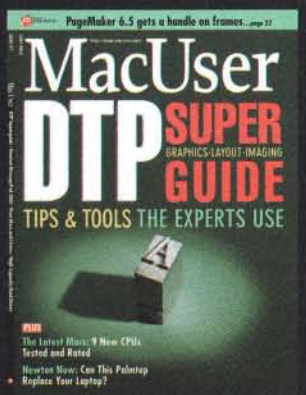
Keep your fingers crossed.

This project will be
a legacy to the art world.

Your ideas. Your vision.

You're the Picasso of design,
modernizing today's concepts.

Why should a modern-day Picasso spend her blue period researching 14 different dye-sub printers?



MacUser

Get The Answers,
Get To Work.

UMAX SUPERMAC
S910/250
OCTOBER '97

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PHASER 480X
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LINOTYPE-HELL
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The art world waits for another masterpiece. Don't spend your creative energies deciphering the various resolutions of today's color printers. MacUser does it for you. Every month, we turn our exacting criticism on the most promising graphic design products for Macintosh. Our expert advise is the result of a rigorous testing environment — MacUser Labs. Our technicians present their findings in concise articles, each stamped with the authoritative mouse rating — the most trusted symbol of product quality in the industry. MacUser's definitive reviews save you hours, possibly days, finding the best tools for your work. So you can place even greater demands on your creativity.

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StarMax Rising
To find out more about the new CHRP systems, check out Motorola's StarMax page, at www.mot.com/starmax

Hell-raiser
To read the complete story of how Macs were used to create *Spawn*'s hellish Earth, check out our exclusive report, at www.macuser.com/mu_1097/spawn

StarMax: The Next Generation

First CHRP clone delivers on compatibility

Ask three people what CHRP is, and you'll get three answers: (1) A computer that can run multiple operating systems, (2) a platform for building fast Macs, and (3) the sound a bird makes. With Motorola's StarMax Pro 6000/266, the first production computer based on the Common Hardware Reference Platform, only the third answer is wrong.

When testing a new Mac OS system, it's easy to overlook compatibility, because up until now, all Mac clones have been based on Apple's own logic boards. However, because the StarMax Pro is the first Mac OS system *not* based on an Apple design, compatibility can't be taken for granted. That's why we ran the StarMax Pro through several compatibility tests, which it passed with flying colors.

We also checked the system's performance. The prototype we tested had a G3 PowerPC processor, a 266-MHz "Arthur" to be exact, and had a 512K backside Level 2 cache running at a 2:1 bus-speed ratio. It had no onboard, or Level 3, cache.

In our brief time testing Arthur-based products, we've come to expect great things. The StarMax Pro's MacBench 4.0 Processor score, 901, has thus far been eclipsed only by the Power Computing PowerTower Pro G3/275, which has several advantages, including a faster Arthur chip and a 1-MB backside L2 cache running at a 1:1 ratio. Because of CHRP's inherently faster system bus — 66 MHz, in this case — the StarMax Pro won out over all the next-generation systems on the Disk and the Publishing Disk tests.

When the StarMax Pro line ships, in September, Motorola plans to offer it in three configurations, starting at around $3,500: a 233-MHz machine with a 512K L2 cache, 1-MB L3 cache, 4-MB ATI RAGE II+3D graphics card, 2-GB Ultra SCSI hard drive, Zip drive, and 24x CD-ROM drive; a 266-MHz machine equipped exactly like its 233-MHz sibling; and a high-end machine configured like the others except that it has a 1-MB L2 cache, an 8-MB IMS TwinTurbo graphics card, and a 4-GB Ultra SCSI drive.

And, yes, per the CHRP specification,

all three will ship with a PC parallel port and a PC serial port. They will even run multiple operating systems — Motorola has qualified its design to run the BeOS and mkLinux for CHRP, both expected by year's end. The company also expects the StarMax Pro to run Rhapsody when it becomes available next year. · *Andrew Gore*

	MacBench 4.0 Processor Score	Disk Score	Publishing Disk Score	Graphics Score	Lo-Res Publishing Graphics Score
Motorola StarMax Pro 6000/266	901	690	475	785	770
Reference systems					
Power Computing PowerTower Pro G3/275	1,029	484	312	810	738
Apple Power Mac 9600/350	788	191	251	659	615
Apple Power Mac 9600/233	428	190	247	553	521

MacBench 4.0 scores are relative to those of an Apple Power Macintosh 6100/60 with a 30-MHz memory bus, a 250-MB hard drive, 2 MB of built-in graphics RAM, and no L2 cache. This baseline system is assigned a score of 100 for all MacBench tests. All systems are tested as configured by vendors but with AppleTalk turned off and virtual memory turned on. We set screen resolution to 640 x 480 pixels with a bit depth of 8 bits (256 colors).

Mac Stat · *Andrew Gore*

Apple Business Sales Expected to Skyrocket

Apple Unit Sales

Market	1996	1997	Amount of Growth
Home	598	538	-10%
Education	765	773	1%
Business	575	750	30%
Government	71	78	10%
Total	2,009	2,140	7%

Note: Unit sales are in thousands.
Source: Dataquest, March 1997.

Live Shot · *Brooke C. Wheeler*

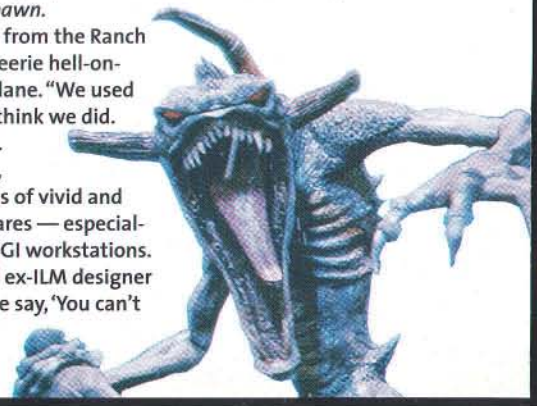
Spawned to Be Wild

To bring a comic-book hell to life, all you need is a few Macs and a twisted imagination. Both came in handy for the ex-Industrial Light & Magic special-effects wizards who helped create this summer's $45-million blockbuster film *Spawn*.

Teams at IDIG, XO Digital Arts, and Banned from the Ranch Entertainment used Macs to bring to life the eerie hell-on-Earth of the comic-book series by Todd McFarlane. "We used no Silicon Graphics workstations, but people think we did. It's all on the Mac," said David Biedny, of IDIG.

Armed only with battalions of Power Macs, *Spawn*'s postproduction teams created dozens of vivid and ghastly effects guaranteed to inspire nightmares — especially for those who have just invested in pricey SGI workstations.

"I wish the word was out there more," said ex-ILM designer Bruce Walter, of XO Digital Arts. "When people say, 'You can't do that on a Mac,' I say, 'Oh yes, you can.'"



Really, Really Big Drives
Check out the first DVD-RAM drives at www.hitachi.com/Pfinder/5014.html

Nukem Good
To download a copy of the Duke Nukem 3D for Mac demo, go to www.macdownload.com

Windows Wannabe
Insignia Solutions claims that its SoftWindows beats Virtual PC in benchmark tests. Check them out at www.insignia.com

Between the Lines
A complete transcript of this interview is at www.macuser.com/onlinecol/rubinstein.html

Help Wanted: Apple CEO

Must be creative self-starter, good with people, and friends with Steve Jobs

THERE'S ONE BRIGHT SPOT in Dr. Gilbert Amelio's forced resignation from his post as Apple chairman and CEO: At least he won't be keynoting at this summer's Mac Expo in Boston.

Amelio, who now holds the record for the shortest tenure in Apple's top position, tendered his resignation after failing to return Apple to profitability and growth after a year at the helm. Some Apple insiders said the self-described turnaround expert's fall from grace started at last January's Macworld Expo, in San Francisco, where his three-hour rambling keynote address was widely acknowledged to be one of the most embarrassing moments in Apple's history.

Still others observed that Amelio's sudden departure was partially the result of conflicts with Apple cofounder and strategic advisor Steve Jobs, who had reportedly disagreed with several of Amelio's recent decisions. With Amelio's resignation, Apple announced that Jobs' advisory role would expand and that he would now be helping set strategy in product development, marketing, sales, and partnerships. He will also be part of a small committee that will hire Amelio's replacement.

According to company CFO Fred Anderson, who will be jointly running Apple with Jobs until a new CEO is found, the Apple board of directors' decision to give Amelio his walking papers was not tied to any specific issue.

"Apple needed a different-profile CEO to take the company to the next level," Anderson said.

In related news, Ellen Hancock, who was heading up Apple Research, also resigned. She originally joined the company last year to run engineering and quality assurance and was widely credited with getting Apple on a timely OS release schedule. · *Andrew Gore*

Illustration · John Ueland

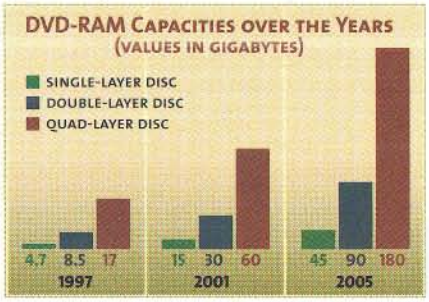
Future Tech · *Rik Myslewski*

What Would You Put on a 180-GB Floppy?

Ever wish that the pace of innovation in this wacky computer biz would slow down a bit? Case in point: Although DVD-*ROM* drives are only now beginning to appear, Hitachi recently announced that it'll ship DVD-*RAM* drives later this year and hinted that the next two DVD generations will be of such voluminous capaciousness that current DVD-ROM technology will seem puny by comparison.

Hitachi's DVD-RAM drives — euphoniously named GF-1000 (ATAPI), GF-1050 (internal SCSI), and GF-1055 (external SCSI) — will use phase-change technology to store up to 2.6 GB on each side of a double-sided DVD-RAM disc and will also read CD-ROM, DVD-ROM, CD-R, and CD-RW formats. Expect transfer rates of 1.38 MB per second, doubling to 2.76 MB per second when second-generation 4.72-GB-per-side discs appear a few months into the next millennium.

Hitachi is not content to stop there — the company's engineers are busy working with green and blue lasers, multilayer recording, and high-density signal processing to triple



DVD-ROM and DVD-RAM capacities from 3 to 9 GB per square inch by 2001. If — when? — they succeed, single-layer, double-layer, and quad-layer DVD-ROMs will reach capacities of 15, 30, and 60 GB, respectively.

And — of course — there's more. Senior Hitachi brass predict a further tripling of DVD-disc capacity to 45 , 90 , and 180 GB by 2005. Quick back-of-the-napkin math: If printed out in good ole 12-point Geneva on good ole photocopy-quality paper, a 180-GB text file would stack up four miles high. Uncompressed.

In Brief

Woz Way Apple cofounder Steve Wozniak is apparently unimpressed with former partner Steve Jobs' NeXT OS. At a recent keynote address at the annual MacHack conference, Wozniak said he thought the money Apple spent on acquiring NeXT would have been better invested in improving the company's position in education.

PPCP, We Hardly Knew Ye Apple has decided to stop referring to the Mac-clone architecture as the PowerPC Platform, or PPCP, and return to the original moniker, CHRP (Common Hardware Reference Platform). Apparently, no one used the PPCP name, preferring the more easily pronounced CHRP.

The Duke of Mac So, there's no market for Mac games, eh? Well, don't tell that to MacSoft, which recently shipped the Mac version of the top-selling PC game Duke Nukem 3D. According to MacSoft, Nukem for Mac is selling so fast that it turned a profit in its first week on the market.

Cheap at Half the Price Feeling pressure from Windows-emulation newcomer Connectix's Virtual PC, Insignia Solutions has cut the price of its Windows-emulation products by up to 50 percent. SoftWindows 95 4.0 now costs $199, down from $379, and the price of SoftWindows 3.0 is down to $149 from $299. Insignia also announced RealPC, which will run DOS games on the Mac. · *Andrew Gore*

Between the Lines

Back to Basics

"Sometimes it's better to just make a decision and move on than it is to get the right decision. You'll never be 100 percent finished. So you have to pick a point in time where you're done and save what's left for Rev 2."

— Jon Rubinstein,
Apple senior vice president of hardware engineering, explaining how Apple is going to get to market faster with innovative products

Close Encounters of the Nerd Kind
A complete report on Grant Bayley's conversation with Power's Joel Kocher is in Bayley's letter to MacInTouch, at www.macintouch.com/bayley.html

Pentium at the PowerPC Corral
To read the *MacUser* feature that first called MMX's bluff, go to www.macuser.com/mu_0797/features/mmx.html

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Power Plays to Public Offering

Power Computing moves toward Intel

Imagine your surprise when you, a Mac enthusiast living Down Under, pick up the phone at 11 A.M., Australia time, and it's Joel Kocher, Power Computing's president on the line. He's calling to personally explain his company's recent revelation that it will be selling Windows machines — and how this is actually good for the Macintosh.

It seems the leading Mac OS licensee is again proving that it is truly the Elvis of the Mac market, with its flair for unparalleled showmanship combined with an inability to steer clear of controversy. At issue this time: A recent U.S. Security and Exchange Commission filing exposed the company's intent to build and sell Intel-based computers running Windows NT and 95.

It was this item that prompted Australian Grant Bayley to write to Power asking if it was abandoning the Mac platform. Kocher called to reassure Bayley that his company was still solidly committed to its Mac products and customers and to explain how NT servers from Power may help protect the Mac installed base at some large corporations by offering a single source for both platforms.

Although rumors of Power's abandonment of the Macintosh may be somewhat exaggerated, another recent revelation shows that the company may be distancing itself from Apple — more and more, Power will be getting its OS licenses from IBM. Because IBM discounts Mac OS licenses when clone vendors also buy PowerPC chips, this move was apparently made to help offset higher licensing fees soon to be levied by Apple (see "Apple's New Clone Order," September '97, page 22). · *Andrew Gore*

Photoshop Shoot-out Revisited

Pentium II still no PowerPC, even with NT

Not everyone was convinced by the thrashing the PowerPC gave Intel's Pentium II with MMX technology in our cross-platform Photoshop shoot-out (see "Pentium II: The Empire Strikes Out," August '97, page 61). After all, we ran our tests with Windows 95, not Windows NT, because a bug in the MMX-optimized version of Photoshop 4.0 prevented us from getting accurate results when running the tests on Microsoft's workstation OS.

With the recent arrival of Photoshop 4.0.1, the problems that snafued our NT tests have been resolved, so we dusted off that Gateway 2000 machine with the 266-MHz Pentium II and reran the Photoshop shoot-out with NT inside.

Windows NT did deliver a 15-percent speed boost over Windows 95 on the same machine, the resulting scores eclipsing those of the Power Mac 9500/200 in two of our three primary tests (see chart, below).

However, before all you Photoshop jockeys run out and buy yourselves an NT box, it should be noted that the Gateway machine had several advantages over the now vintage 9500 — including a faster system bus and processor. Recently shipped 250-MHz Macs, not to mention next-generation machines announced by Apple, Power Computing, and Motorola (see related stories in this issue) and a faster Mac OS (version 8) should once again tip the scales solidly in the Mac platform's favor. · *Andrew Gore*

MacUser LABS	*Rotation of 50-MB Photoshop Image 3°*	*Conversion of 50-MB Photoshop Image from RGB to CMYK*	*Lighting Effects on a 10-MB Photoshop Image*
Gateway 2000 with 266-MHz Pentium II	31	16	22
Apple Power Mac 9500/200	36	27	23

Time in seconds represents average result of four trials; shorter is better.
Test configuration: Photoshop 4.0.1 (with MMX plug-ins on PC) ran in a 175-MB RAM partition on both Mac and PC. Each machine had 256 MB of RAM, a 4-GB Wide SCSI-2 hard drive, and a 4-MB ATI graphics card. The 9500 ran Mac OS 7.6; the Gateway PC ran Windows NT.

Online

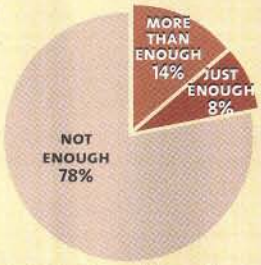
Exclusive Utility of the Month

From Bill Tudor, the author of Web Ninja, comes Bookmark Buddy, a utility that searches through your browser's bookmarks and flags the ones you haven't visited in a while. You can then tell Bookmark Buddy to go to a URL, remove it from your bookmark list, never remind you of that bookmark again, or just ignore the message. Bookmark Buddy is available free, beginning August 31, exclusively from ZDNet Mac Download on the Web (www.macdownload.com) and on CompuServe (GO ZMC:MACUSER).

Drag (and Drop) Queens DragThing and HoverBar are two of the best application launchers available for the Mac. Just create a new palette, and then fill it with all the applications and documents you access frequently. Each product allows you to launch or open them with a single mouse click. · *Philip W. Dyer*

Online Poll

Q. Is Apple doing enough to facilitate the Mac-clone market?

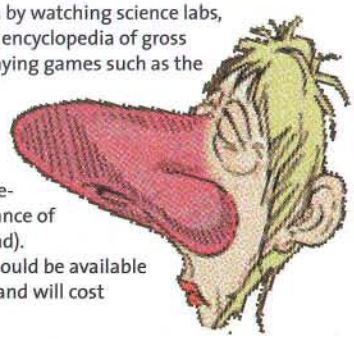


To vote in the latest *MacUser* online poll, go to www.zdnet.com/mac/opinion.html.

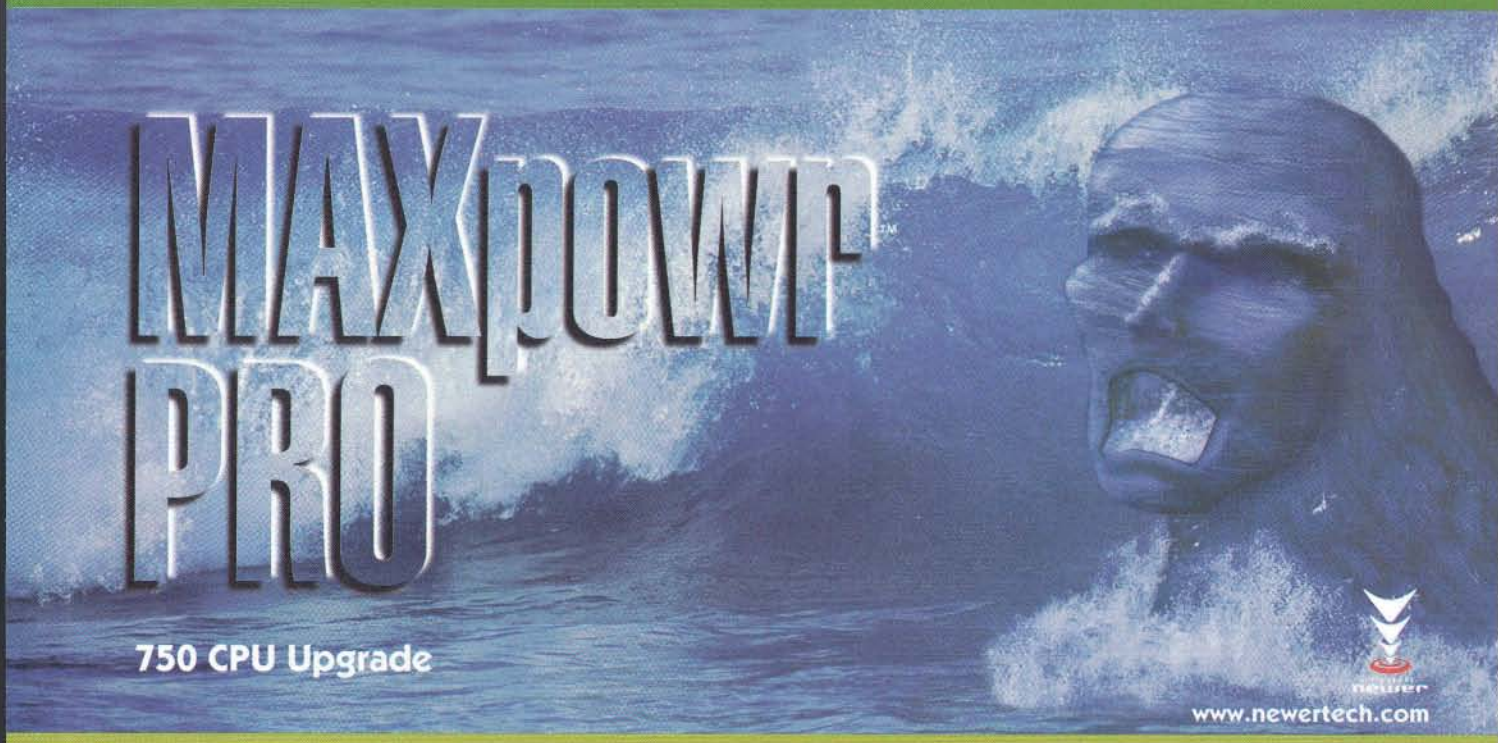
The Off Beat · *Nancy Peterson*

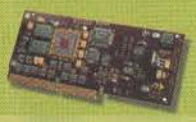
Scatologically Correct

How often do we fart? What function does snot serve? What's in the white head of a zit? The answers to this and other such nagging questions are what Grossology, from SegaSoft, is all about. This children's physiology software lures in young ones (ages 6 to 14) with talk of snot, poop, vomit, and saliva and then gives them a better understanding of how our bodies work. Children learn by watching science labs, searching the encyclopedia of gross terms, and playing games such as the Scab Game (a fierce battle between white blood cells and bacteria for dominance of an open wound). Grossology should be available in November and will cost around $40.



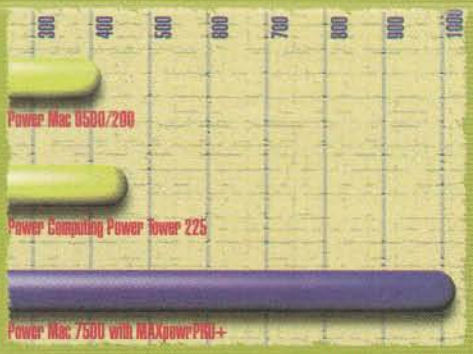
You'll RAVE about the next WAVE in SCREAMING PERFORMANCE.





In the face of the tidal wave of 750 CPU computers that are about to roll out, you might be thinking your current PowerPC computer is all wet. You would be wrong. Because now you can upgrade your Power Mac or clone with MAXpowr PRO and MAXpowr PRO+. They're daughterboard upgrades with the new 750 chip built in. They use a revolutionary new backside cache system that allows for dramatically enhanced Bus Speeds between the CPU and the cache.

newertech
FASTFORWARD THINKING



Newer Technology, Inc.
Phone: 316-943-0222 • FAX: 316-943-4515
4848 W. Irving • Wichita, KS 67209
E-mail: info@newertech.com

Preliminary MacBench 4.0 tests say that the MAXpowr PRO with 512K of backside cache nearly doubles the performance of older 604e processors.

The MAXpowr PRO+ features an amazing 1MB of backside cache that helps boost processing speed an astounding 2.5 times. And both upgrades are built by Newer. We're recognized by the trade press for the stable performance of our accelerators.

So if you want to add incredibly powerful 750 chip processing to your PowerPC Mac or clone, ride the tide with MAXpowr PRO or MAXpowr PRO+.

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CIRCLE 112 ON READER SERVICE CARD

The Ongoing Apple Saga
For the latest news about Apple Computer after Amelio, go to www.zdnet.com/mac

SPECIAL REPORT

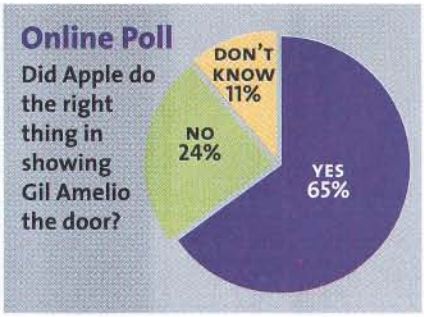
News Analysis · *Andrew Gore*

Apple After Amelio

New CEO may spark Mac renaissance

Apple's board of directors has followed the old adage that if you don't like the meal, fire the cook.

Dr. Gilbert Amelio's forced resignation in July was sudden and swift, but almost no one within Apple was especially surprised where it hit. Several Apple executives contacted by *MacUser* noted that Amelio had become more and more withdrawn from his own senior staff in recent months. Worse yet, Amelio was not connecting with Apple's rank and file. A company once known for hiring the best and the brightest had become plagued by employee departures.



But paramount among Amelio's failings as leader of Apple was his inability to connect with the company's customers. As one Apple executive pointed out, Amelio had no experience in selling products to consumers and as a result, he was at a loss when in the field, trying to keep major accounts from going to other vendors. The recent defection of one of Apple's largest education resellers to Power Computing was one of the more glaring examples of how Apple's chief salesman wasn't able to sell.

Jumped or Pushed

Unlike previous Apple CEOs forced to resign, Amelio was not spinning out of control. He had made several good hires, including IBM cohort Ellen Hancock, whom many credit with getting the Mac OS back on track, and Fred Anderson, who all but rescued the company from financial ruin.

Other key decisions were more questionable: buying out NeXT Software; making its OpenStep the foundation for Apple's next-generation operating system, Rhapsody; and bringing Apple cofounder Steve Jobs back to the company as a part-time adviser. Ironically, the latter step may have been Amelio's fatal mistake.

Depending on whom you talk to, Steve Jobs' role in Amelio's ouster ranged from innocent bystander to Machiavellian engineer. The most charitable appraisals of his involvement had Jobs, after being consulted by the board on a decision the group had already made, simply affirming that Amelio may have been the right man for National Semiconductor but was the wrong man for Apple.

Darker assessments of Jobs' intentions had Jobs manipulating the situation from Day 1, first driving a wedge between Amelio and his key advisers (Hancock's fall from grace happened as much because she didn't get along with Jobs as for any other reason) and then surrounding him with senior staff — such as ex-NeXT personages Avie Tevanian and Jon Rubinstein — loyal to Jobs. His involvement in the search committee for Apple's new CEO virtually guarantees that whoever takes the CEO spot will be someone Jobs approves of and gets along with.

Where Now?

Whether Jobs arranged Amelio's departure or not largely doesn't matter. A short review of the list of issues Apple's new CEO will have to deal with shows that Amelio was not doing the job Apple needed him to do:

Shrinking market share The Macintosh market is slowly contracting. As the leadership in Cupertino failed to give Mac buyers a reason to stay with their chosen platform, more and more Mac users have decided to switch rather than fight.

Shrinking sales Although total Mac sales are not growing at the rate of the general computer market, Apple's own sales have all but collapsed in the last year, as clone vendors have taken about 30 percent of Apple's sales away, with faster machines sporting more options and at better prices. It can be argued that these sales would have gone to the Wintel platform had it not been for Mac OS licensees, but Apple must find a way to shore up its shrinking hardware sales or it must leave the hardware business altogether.

Shrinking margins A drop in sales can hurt a company of Apple's size, but a decline in margins and, therefore, profitability can be brutal. Apple must reduce overhead again to match its sales volume — or find a way to grow its eroding margins.

Loss of leadership Light-footed and expertly managed licensees have usurped the moral and technological leadership of the Macintosh market. Apple must again trumpet the strengths of its platform.

Exit Amelio, Hancock

The resignations of Apple CEO Dr. Gilbert Amelio and Executive Vice President Ellen Hancock prompted new questions about the company's financial future and leadership vacuum.

"The bottom line is that the board is not happy with the financial performance of Apple, and it wants us to get back on a path of growth and sustainable profitability," said Apple Chief Financial Officer Fred Anderson, who is acting CEO.

Anderson retreated from earlier predictions that the company would make money by the fourth quarter of fiscal 1997. "We're out of the business of predicting when the company will return to profitability," he said. Anderson said the company is not up for sale.

One name that has floated to the top of the CEO list is Steve Jobs'.

"I don't know what conversations Steve has had with our board of directors," Anderson said, "but it's my understanding he's very comfortable in his role as CEO at Pixar [Animation Studios] and serving as consultant to our executive team and board."

"The [next CEO of Apple] has got to be someone who can rally the troops and strike confidence in the employees and developers, a strong leader in both marketing and technology. At the end of the day, Apple is primarily a technology company."

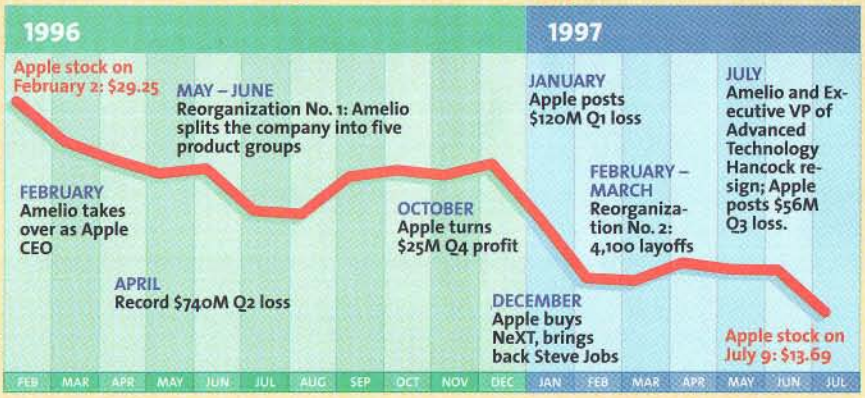
*— **Ellen Hancock**, former Apple executive vice president of advanced technology*

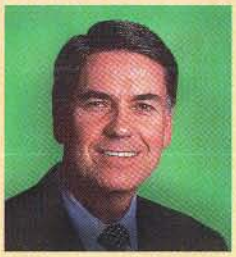
Analysts speculated about why Amelio failed and who will replace him. "There was clearly a lack of confidence in his ability to

The Apple Corps
To hear Real Audio of the latest news coming out of Cupertino, go to www.zdnet.com/zdnn/special/spec9.html

Amelio's 523 days fail to turn Apple's fortune.

MAY 1996
"A year from now, people will look back on this period and wonder what the fuss was about."
— Apple CEO Gilbert Amelio, plotting his company's comeback, at WWDC





JULY 1997
"We're out of the business of predicting when the company will return to profitability."
— Executive VP and CFO Fred Anderson

In the end, where Apple goes from here will depend largely on who succeeds Amelio. Sharp senior management from a major Wintel clone company could get Apple focused and competitive in the reality of today's hardware market — no doubt with more bloodshed down at Apple's headquarters. A CEO more familiar with running a software or content company might choose to junk Apple's hardware efforts, leaving it to the Mac OS-clone makers to build the hardware while Apple develops and licenses the software. Such a strategy would also require a significant resizing of Apple's organization to bring it in line with its new role as a software-only organization.

Another CEO might choose a third option: freeze out the licensees, focus in on Apple's core creative markets, and turn the company into a highly focused vertical-market organization.

One thing is sure: How Apple's future executive team handles and, we hope, capitalizes on those changes will determine if the company's multicolored logo will continue to be an icon of innovation or a historical footnote.

Developers React

FEW MEMBERS OF THE MAC COMMUNITY expressed sadness or surprise at the resignation of Apple CEO Dr. Gilbert Amelio. However, developers and analysts alike said they were sorry to see Executive Vice President of Advanced Technology Ellen Hancock go.

Amelio's resignation came "not a moment too soon," said Lou Doctor, president and CEO of Truevision, of Santa Clara, California. "[Apple's] lack of direction has frustrated everyone in the industry."

Vendors said that with its declining market share and fiscal performance, Apple was long overdue for a change in leadership.

"We've been concerned about some of Apple's eroding market share, and we're really committed to Apple's success," said John Warnock, CEO of Adobe Systems, of San Jose, California.

Many developers said Amelio didn't supply the market focus Apple needed. "With the breathtaking amount of technological innovation that has rolled out of Apple, the lack of a marketing-driven CEO at the top has hurt Apple in every conceivable way," said John Wilczak, president of Carpinteria, California-based MetaCreations.

According to Neil Selvin, president and CEO of Global Village Communication, of Sunnyvale, California, Apple needs someone who can focus on "winning back market share and some of the core customer groups. They need to be real guerrilla marketers, and we haven't seen much of that."

By contrast, many observers said they regret Hancock's decision to leave the company. Roger Kasten Jr., chief technical officer at Newer Technology, of Wichita, Kansas, said, "We're very disappointed to see Ellen go. She had an excellent handle on the technology and a good eye for the future."

Phil Pompa, vice president of marketing for Fremont, California-based UMAX, summed up the community's concerns: "The same course, the same speed, isn't going to cut it." · MacWEEK *staff report*

turn the company around," said Tim Bajarin, of Creative Strategies Consulting of San Jose, California, adding that Apple needs a top-level player to rein in the company or sell it.

According to Pieter Hartsook, an industry analyst and ex-Apple marketing executive in Saratoga, California, "The only person with an ego big enough to run Apple — apart from [Oracle CEO] Larry Ellison — is Steve Jobs, but I don't think he wants it right now." Hartsook said Ellen Hancock, ironically, "was probably the only person at Apple with the skill set to run the company." · *Clifford Colby and Joanna Pearlstein,* MacWEEK *staff reporters*

Fired with Cash to Burn

During his 17-month tenure, Dr. Gil Amelio, a self-described "turnaround artist," presided over two reorganizations, large staff cuts, and losses of $2.14 billion. Amelio's five-year contract included an annual salary of $990,000 and stock options. In 1996, Amelio got $2.3 million in signing and year-end bonuses; the latter figure was based in part on meeting six of eight goals set by the board. Amelio's employment package also included a $5-million loan. According to the agreement, the loan is repayable within 90 days of his resignation.

As part of his severance package, Amelio will receive the sum of his salary and annual target bonuses for the remaining three and a half years of his contract. In 1996, his target bonus was equal to his salary, but his contract states that the bonus can be 50 percent to 300 percent of his salary. Based on the 1996 figures, Amelio's severance package could be close to $7.5 million — about $3.5 million in salary and $4 million in bonuses. · *Leander Kahney,* MacWEEK *staff reporter*

Riven: The Sequel to Myst
Red Orb Entertainment, Novato, CA
800-548-1798 or 415-382-4400
www.redorb.com

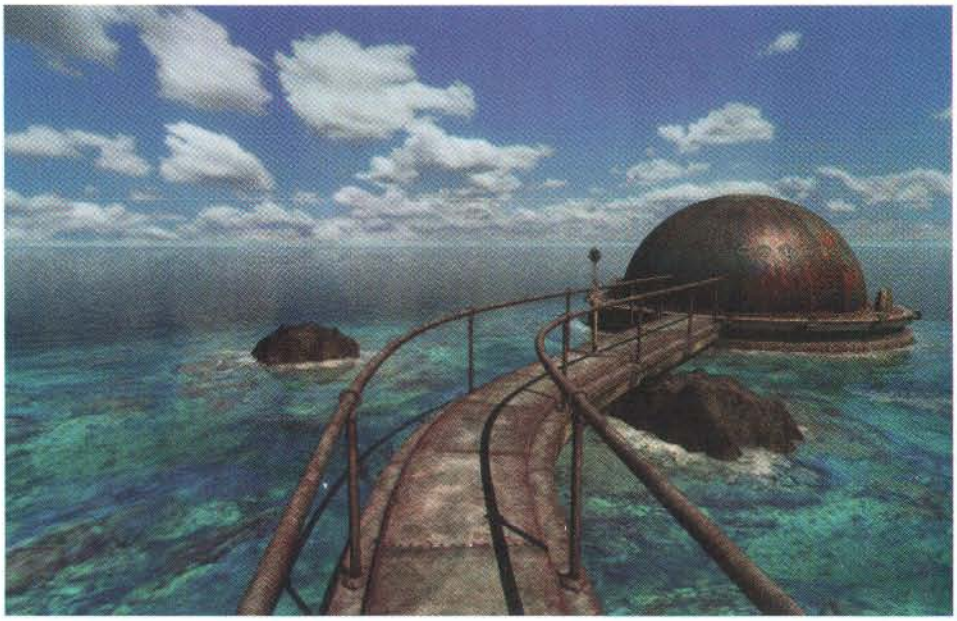
Lost in the Myst
If you've been stuck on Myst island since 1993, here's the place to look for hints. You'll also find the history behind Myst, Riven, and the D'ni at www.Myst.com

What's a D'ni?
Discover Riven news, folklore, and production notes, or just keep abreast of the Myst sequel, at www.riven.com

MacUser Exclusive

A Game Without Frontiers

Riven breaks new ground in both story and visuals — but can it recapture the magic of Myst?



It's been a long wait — four years to be exact. But if you're one of the people who've been anticipating the sequel to the best-selling CD-ROM adventure game Myst, by Rand and Robyn Miller, of Cyan, your patience is about to be rewarded.

This fall, Riven: The Sequel to Myst will be released by Brøderbund spin-off Red Orb. Since last summer, rumors about the sequel's contents have spread through newsgroups, mailing lists, and Web sites. *MacUser* got an exclusive peek behind Riven's veil of secrecy and saw what's really going on with this hotly anticipated game. Based on our observations, it may be time to start planning to be late to work for at least a month this fall.

Out of the Myst

Myst maniacs, and there are many (to date more than 3 million copies of the game have been sold), may remember that at the end of the game, the character Atrus implored you to help him find his wife, Catherine, who was trapped on another world. As the sequel begins, you're transported to that world, a string of five islands named Riven. (*Rive* is a Middle English word that means to tear apart. Before it became a chain of islands, the creators hint, Riven was once one land.)

Atrus warns you that a higher power is involved in Catherine's disappearance before you set off to explore your surroundings and unravel the tangled history of Atrus; his demented father, Gehn; and the D'ni (pronounced, and previously spelled, "Dunny").

Story is fundamental to Riven, even more than it was in Myst. But the first thing that hits you about Riven is its look. On a purely visual level, the game's rich 3-D world completely surpasses the lonely landscapes of the original Myst. Riven is filled with photo-realistic textures, detail, and *motion*. It's as if when you played Myst, you had on the wrong prescription glasses, and now, with Riven, your vision has finally cleared.

The shape of the land is familiar, but you see with cinematic depth. Myst's oceans, for example, were still and solid blue, but Riven's waters lap and reflect over a varied and seaweed-dappled ocean floor. In 3-D terms, numbers best illustrate the difference — a typical Riven island consists of more than 2 million triangles. That's ten times the geometric detail of the Myst island.

Tour de Force

A team of five people in a garage created the original Myst, with six Quadras and HyperCard. This time around, the budget was substantially bigger, and it shows.

The 25-person Riven team was obsessed with details. To make sure they had just the right textures to map onto the

landscape, the Miller brothers flew to Santa Fe to photograph adobe, soil, and stone. You can see corrosion on metal banisters and layers of different rocks in cliff sides. Cyan even claims that every leaf on every Riven tree is unique.

It's this desire for great detail that allegedly led the team to keep the original Myst interface for Riven, instead of implementing the 360-degree vistas of QuickTime VR. Technologies such as that can degrade the edges of the player's view, and the perfectionists at Cyan found this to be unacceptable. The use of the old interface also adds to the sense of being in a familiar place. In fact, the team once again used Macs and HyperCard to assemble the game (although the incredible 3-D work was done on SGI workstations).

Riven is not only intensely photo-realistic but it's also filled with life. The only living thing you bumped into in Myst was a loose knot of butterflies. Here you encounter mythical creatures with realistic animated motions, reminiscent of Jurassic Park's dinosaurs (and created with the same software). Then there are the human characters. Riven includes about an hour of interactive video, and the scenes we saw were notable for their seamless integration with Riven's surroundings. The Riven video team, led by Richard Vander Wende, who directed the visual design of Disney's *Aladdin*, struggled to exactly match the lighting of the video subjects with that of their rendered surroundings. The results are truly impressive.

Riven's sound and music are also bigger and better. The new, somewhat spooky soundtrack is accompanied by multichannel stereo and panning sounds.

All this high-tech stuff will take its toll on your computer: The game will ship on four or five CD-ROMs and will require at least a PowerPC machine with an 80- to 100-MHz processor and a 4x CD-ROM drive, although you will be able to opt for lower-quality sound, images, and animation to make the game playable on older Macs.

Of Epic Proportions

As you wander Riven, the opportunity to learn more about the story is embedded in every detail. The Riven design team's favorite metaphor when describing their new creation is that Myst is to *The Hobbit* as Riven is to *The Lord of the Rings*. Like Tolkien's books, the Millers' new world even has its own language, D'ni, constructed by three linguists from the University of Washington.

The brothers aspired to integrate every part of the game into the central metaphors. That means that unlike Myst, where you had to solve abstract puzzles that rarely seemed dictated by the story's plot, Riven provides puzzles that are now an integral part of the story. The better you know the history of the people and the place, the more you'll understand what puzzle objects are and what you're supposed to do with them.

In our visit, the one thing we couldn't tell was if Riven had managed to keep the trademark Myst feeling of nonlinear play. Somehow Myst managed to be a story that still made us feel as if we really shaped our own experience. Riven's task may prove trickier. Although video characters can really add to the adventure-game experience, they sometimes feel like simple trip wires that lead you to an inevitable and predictable next step. With Riven, the Miller brothers again tackle the big task of making a story feel like a world. Few game developers pull it off — but if anyone can do it, it'd probably be these folks. · *Scholle Sawyer*

Pros: Ground-breaking 3-D graphics; smoothly integrated video; a rich, complex story.
Cons: May not recapture the unique flavor of Myst.
Expected: Fall 1997.

New & Notable

VideoShop 3d 4.0 A new interface and QuickTime enhancements expand the horizons of this venerable video-editing application. For example, version 4.0 adds a QuickDraw 3D track that allows users to import an animated 3-D object and map video onto its surfaces. $495; upgrade, $89. Strata: 800-678-7282 or 801-628-5218; www.strata3d.com.

Iomega Buz Multimedia Producer The folks who brought you the Zip and the Jaz are hoping you'll fill those disks with video, audio, and still images captured on the company's inexpensive Buz JPEG/UltraSCSI PCI card. The card includes a breakout box that offers S-video, composite-video, and stereo-audio connections. $199. Iomega: 800-697-8833 or 801-778-1000; www.iomega.com.

iREZ Kritter Get 30-frame-per-second video on your PowerBook 2400 or 3400, using iREZ's funky-looking Kritter Cam, which transfers images directly into the screen's video buffer over a PC Card. Perfect for your next mobile videoconference. $349. iREZ Research: 800-886-3692 or 612-939-9299; www.irez.com.

Global Village 56K Modem/Ethernet PC Card Proclaimed as the first 56K modem/Ethernet PC Card, this add-in lets PowerBook users browse the Web by using K56Flex technology. It also offers extra protection against electrical surges. $379. Global Village Communication: 800-736-4821 or 408-523-1000; www.globalvillage.com.

Big Electronics Wireless ADB Keyboard This infrared keyboard operates up to 30 feet away from your system. The keyboard runs on two AA batteries and includes the Airpoint mouse replacement, which moves the cursor faster as you push harder. $229. Big Electronics: 512-453-1611; www.webtyme.com/adb.html.

OutBox Working in conjunction with either Claris Emailer or Qualcomm's Eudora, OutBox allows users to send personalized bulk e-mail. E-mail can be customized based on a person's computer platform, job title, gender, political party, and much more. $149. Spinfree: 773-665-4005; www.spinfree.com. · *Kedren Dillard*

Reviews Rating Key
Outstanding · Very Good · Acceptable
Poor · Seriously Flawed · Dangerous

Adobe Illustrator Now Easier to Use

Illustrator 7.0 ½

$595; upgrade before September 1, 1997, $99; upgrade thereafter, $129 *(list)*

Drawing application challenges Macromedia FreeHand 7's edge with an easier-to-use interface and some Web-friendly capabilities — but adds only a small number of new features.

Competition for top-dog status in the drawing-package arena is brutal — especially between Macromedia's FreeHand 7 (½, March '97) and Adobe Illustrator. FreeHand 7 crept ahead in its latest incarnation, but the folks at Adobe aren't ignoring the challenge.

With its latest upgrade to Illustrator, Adobe has adopted an interesting strategy: Instead of unveiling a plethora of new drawing tools and features — as did Macromedia with FreeHand 7 — Adobe has focused on making it easier to use Illustrator's already rich array of existing features and on facilitating the distribution of finished artwork.

This version's productivity enhancements include a sweeping interface overhaul, snappier screen response, and customizable nonprinting grids. The new ability to link to placed images instead of forcing documents to embed images reduces file sizes considerably. The concurrent release of a Windows version of Illustrator, with feature parity and file compatibility, aids those working in a cross-platform environment.

The standouts among the few new drawing features include a tool for reshaping paths and the ability to make adjustments to multiple-master fonts on the fly.

An Adobe Family Resemblance

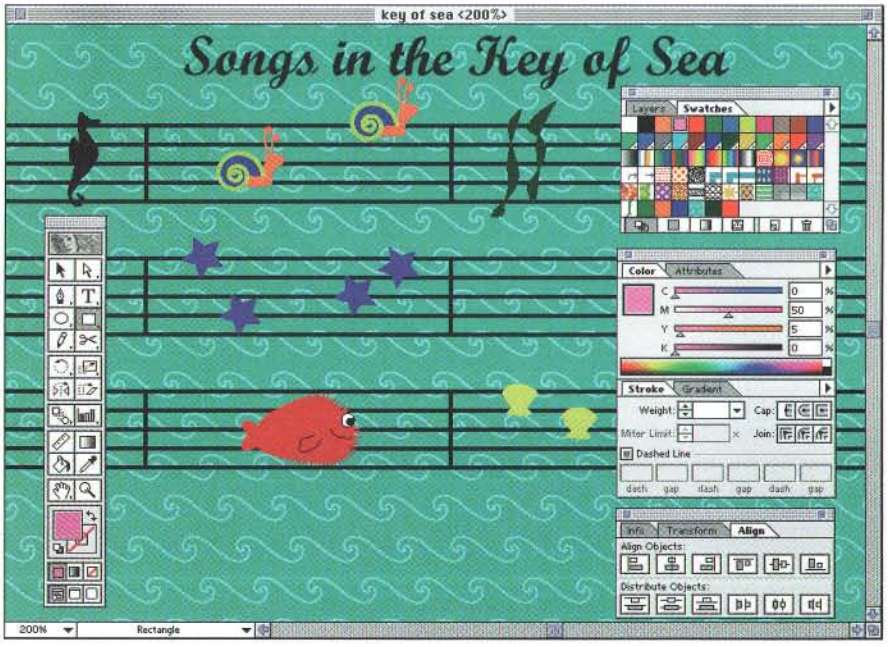
Illustrator 6.0 was hamstrung by overstuffed palettes, disorganized menus, and a bloated toolbox. Version 7.0's new, more intelligently designed structure is different enough to cause veterans a short adjustment period, but it's well worth the minimal effort required. If you regularly use Adobe Photoshop or Adobe PageMaker, you'll have an easy time with the transition, as Illustrator's new look borrows heavily from these corporate siblings, complete with tabbed palettes and a look-alike toolbox and main menu. Because of the interface similarity, a very minimal mental shift is required to switch among Illustrator, Photoshop, and PageMaker.

Each palette, such as Transform, Character, and Gradient, controls a focused set of functions. This not only minimizes their size but also makes them easy to navigate. To save screen space, you can drop one palette on top of another to group them together in a single container. If you want to access a palette that's behind another, you click on the tab on the top of it. If you want several palettes visible at once but hate rearranging them when they get in the way of your drawing, you can try dragging a palette to the bottom of another. When you release the mouse button, the palettes will be docked together and will thereafter move as a unit.

Many palettes also contain a handy pull-out menu, offering quick access to palette-specific functions. For example, the pull-out menu on the Paragraph palette offers commands for controlling hyphenation and displaying word-spacing and letterspacing controls.

Particularly useful new palettes are those that replace the screen-hogging, eye-crossing Paint Styles palette. The Color, Gradient, and Strokes palettes, along with new icons on the tool bar, make the process of filling and stroking objects more intuitive. Another new palette, the Swatch palette, is where you store patterns, gradients, and process and spot colors you're using in your document. Separate palettes containing libraries of commercially available color swatches, such as those from Pantone and Trumatch, are also included. You can also drag the swatches of wanted colors over to your personal swatch palettes.

Adobe now lets Illustrator take better advantage of its multiple-master font technology. You can now adjust font weight and width on the fly, using simple sliders — but you can't save these custom-adjusted fonts for use with other applications. Adjustments were smooth, and



Streamlined menus and palettes and a new toolbox distinguish Adobe Illustrator 7.0's major interface overhaul.

Adobe Illustrator 7.0
Adobe Systems, San Jose, CA
800-649-3875 or 408-536-6000
www.adobe.com
Reader service: circle #401

results appeared instantaneously on both a Power Computing PowerCenter 150 and a slower Apple Power Mac 7500/100.

The new Reshape tool adds some interesting path-editing capabilities. It's a bit tough to get the hang of it, but the tool proves to be a valuable addition. It lets you adjust the overall shape of a path while keeping the path details intact. Example: You've drawn an object with fine edge details, such as a cartoon character's punky hairdo or a spiky puffer fish. You want the object to be rounder but cringe at the thought of editing the dozens of anchor points. That's when you'd use the Reshape tool to pull the anchor points into the correct position.

Perfection Is Elusive

These improvements are all well and good, but some problems remain. For example, beware of the inelegant way Illustrator handles spot-color printing. For example: You have used a spot color in a document and then pasted in an object filled with that same spot color from another document. Illustrator won't automatically put them on the same printing plate — you've got to remember to select Merge Colors from the Filter menu for that to happen. Worse, the colors will merge only if they have exactly the same name.

The new menu organization isn't quite complete, either. Most of the items that were clogging up the Filter menu have been intelligently relocated, but strangely, commands for customizing masks are still there, instead of on the Object menu, where they belong. The Window menu offers access to most of the palettes, but you cannot use it to display text-related palettes — they're accessed via the Type menu. Why not have access from both places?

Some of the new keyboard shortcuts will take time to learn. For example, Command-U is no longer Ungroup; it now hides objects instead. Shortcuts for selecting tools have also been revamped. Photoshop veterans will appreciate that a dozen of these keyboard shortcuts work identically in both Illustrator and Photoshop.

World Wide What?

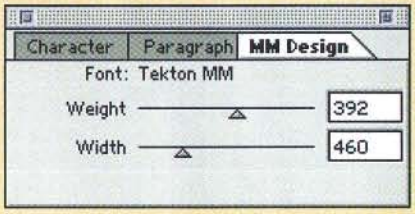
No self-respecting mass of code would upgrade these days without a nod to the World Wide Web, and Illustrator is no different. Illustrator now lets you mix colors by using the RGB model, so you can design in the color model that is appropriate for on-screen display — finally. Also, Illustrator now lets you attach URLs to objects and save these image maps in GIF89a and HTML format. Illustrator 7.0 is no HTML editor — it's not meant to be — but the capability can come in handy for Web-page production.

In addition to its revamped interface and its Web savvy, Illustrator 7.0 also features faster performance. When switching between 25-percent and 600-percent views on a 3,200-x-2,133-pixel, 300-ppi TIFF file, Illustrator 7.0 performed the task instantaneously; Illustrator 6.0 took about six seconds. It's important to note that this acceleration doesn't rely on any pixel-dropping parlor tricks — maximum screen resolution is maintained as long as the image data supports it. Furthermore, when we drew with the Pen tool on top of that image, Illustrator 7.0 showed no signs of the annoying hesitation that plagued Illustrator 6.0. All the tests were run on a Power Computing PowerCenter 150 with 32 MB of RAM — hardly a cutting-edge machine.

Before you decide to upgrade, make certain you have the necessary hardware. Illustrator now needs 16 MB of RAM — and you'll need more if you plan to place large raster images and use Photoshop-compatible filters. Illustrator also hogs hard-disk real estate; the Easy Install eats up more than 60 MB of space.

If you use Asanté Technologies' NetDoubler to accelerate your Ethernet network, note that we were unable to launch Illustrator when version 1.3.1P of the NetDoubler control panel was loaded. Pulling NetDoubler out of the Control Panels folder solved the problem.

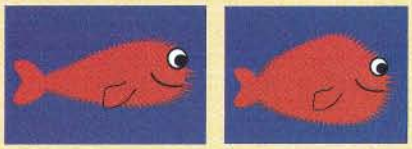
The Bottom Line Although the enhancements in Illustrator 7.0 may not seem glamorous, they'll help you work more efficiently and they easily justify the upgrade fee. But are they enough to put Illustrator above rival Macromedia FreeHand? Without a doubt, Illustrator is better integrated with Photoshop and PageMaker and has superior path-pattern, eyedropper, and rasterizing features. But it still lacks some important features that FreeHand offers, such as multiple-object blends, multiple-page support, envelope distortions, extensive find-and-replace-graphics capabilities, and fine control over text on a path. The competition remains white-hot. · *Shelley Cryan*



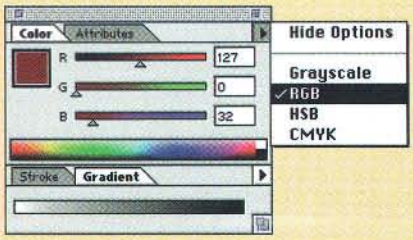
Multiple Master

Multiple Master

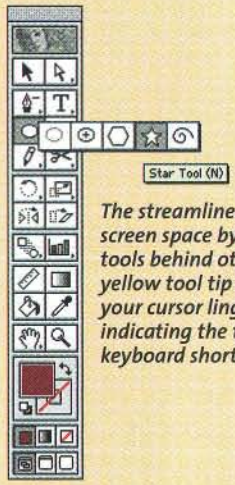
Illustrator 7.0 lets you adjust multiple-master fonts on the fly. You can use sliders on the Multiple Master Design palette (top) to make fonts that range from tight and light (left) to wide and heavy (right).



Illustrator's new Reshape tool lets you quickly adjust the overall shape of an object while maintaining selected fine details. Here, we inflated the puffer fish on the left by selecting all the spines on one side, clicking on a single spine with the Reshape tool, and dragging the spine outward — thus forcing the other spines to follow.



The new tabbed palettes are customizable. Here, the Color palette is grouped with the Attributes palette and that group is attached, or "docked," to a group containing both the Stroke and the Gradient palettes.



The streamlined toolbox saves screen space by tucking some tools behind others. A small yellow tool tip appears when your cursor lingers over a tool, indicating the tool's name and keyboard shortcut.

Reviews

Virtual PC 1.0
Connectix, San Mateo, CA
800-950-5880 or 415-571-5100
www.connectix.com
Reader service: circle #402

Virtual PC 1.0

With Microsoft Windows 95 or 3.11, $150 *(estimated street)*

PC-emulation software fails to deliver on its promise and trails its main competitor.

We wanted to like Connectix's Virtual PC — honest, we did. The need for it is clear: Software PC emulation such as SoftWindows 95 4.0 (♦♦♦½, July '97), from Insignia Solutions, has never been more than a poky substitute for costly PC-compatibility hardware. Virtual PC's prerelease buzz was promising — there were even some positive early reviews based on cursory testing. Its lineage is also impeccable: Connectix engineers are justly famous for creating such gems as RAM Doubler and Speed Doubler. We thought that if anyone could create a software solution to the PC-emulation problem, the folks at Connectix could.

Well, they didn't.

Unlike other PC-emulation schemes, Connectix's Virtual PC emulates the guts of an entire PC: processor, video, sound, and networking chips. Unfortunately for Connectix, however, our testing showed that Virtual PC runs Windows 95 software significantly slower and with less compatibility than its main competition, SoftWindows 95 4.0, although some DOS games — notably id Software's popular Quake — did run faster.

Like SoftWindows, Virtual PC comes with either Windows 95 or Windows 3.11, which you can run in a Mac window or in full-screen mode. Since it emulates a complete PC hardware setup, Virtual PC can also run other Intel-chip-based operating systems, including Windows NT, OS/2, and OpenStep.

Our disappointment with Virtual PC began when we tested it on both a PowerPC 603e-equipped Performa 6400/200 and a 604e-equipped Power Mac 8600/200. On both machines and in several Windows-application tests, Virtual PC was significantly slower than SoftWindows 95 4.0. For example, Ziff-Davis' industry-standard WinBench 97 benchmark application showed Virtual PC to run, overall, at about two-thirds the speed of SoftWindows 95 on the Power Mac 8600.

Speed was not the only problem. Virtual PC also took nearly twice as long to launch Microsoft Internet Explorer as did SoftWindows. Virtual PC could not complete the industry-standard Ziff-Davis Winstone 97 benchmark, which runs 13 popular Windows applications by employing standard Microsoft scripting software commonly used by developers. (SoftWindows 95 has no problems running Winstone 97.) Virtual PC repeatedly froze both Macs during the PowerPoint test. On the Performa 6400/200 — but not the Power Mac 8600/200 — we did get Virtual PC to run the Winstone database test, consisting of Microsoft Access and Borland Paradox, but Virtual PC's score was much lower than that of SoftWindows 95 4.0.

Virtual PC also had trouble running Windows DirectX games, such as GT Interactive's Tigershark and Rebel Moon Rising, on the Performa 6400/200. Virtual PC's support of MMX didn't help here, as the application took more than five times as long to run Tigershark's introductory animation sequence as did SoftWindows, which does not support MMX. Rebel Moon Rising, which would not install in SoftWindows 95 because of the latter's lack of MMX support, installed fine in Virtual PC — but was unplayably slow. So was another popular Wintel game, Blizzard Entertainment's Diablo — which wouldn't run at all on the Power Mac 8600/200.

Virtual PC did better with other games. It ran Quake and 3D Realm's Duke Nukem two to three times as fast as SoftWindows — although, as with SoftWindows, Virtual PC's performance was nowhere near that of even a low-speed Pentium-based PC. Virtual PC also ran Battle Cruiser 3000, a DOS game we couldn't install in SoftWindows 95. To its credit, Virtual PC supports SoundBlaster sound in both DOS and Windows — SoftWindows supports SoundBlaster only in Windows.

If you're thinking of using Virtual PC in a business setting, be forewarned: Virtual PC lacks the sophisticated networking capabilities of SoftWindows 95. For example, Virtual PC can't connect to a token-ring network, as can SoftWindows. What's more, Virtual PC can't run simultaneous Windows and Mac Web-browser sessions over the same Internet connection — a handy feature for Web developers — without separate IP addresses for the Mac and Virtual PC; SoftWindows 95 can.

Finally, the Virtual PC bundle also lacks much of the Windows 95 networking software that comes with SoftWindows, including the Novell NetWare client, Microsoft Office Viewers, Adobe Acrobat Reader, and browser plug-ins for Shockwave and Real Audio.

The Bottom Line Although Virtual PC costs essentially the same as Insignia Solutions' SoftWindows 95 4.0, it runs Windows 95 applications significantly slower. SoftWindows is also more compatible with Windows 95 software, has better networking capabilities, and provides AppleScript and Apple Guide support in the Windows environment (Virtual PC doesn't). Virtual PC is better for playing DOS games, but it is sluggish for playing Windows DirectX games. Overall, Virtual PC 1.0 is a disappointment; stick with SoftWindows 95 4.0. · *John Rizzo*

Virtual PC Can't Catch the Competition

If something sounds too good to be true, it probably is. So it is with Virtual PC.

Since hardware PC-compatibility solutions run rings around all software emulators, the only fair competition for Virtual PC is its software rival, SoftWindows 95 4.0, from Insignia Solutions. When we ran industry-standard test suites based on Ziff-Davis' Winstone benchmark application and also looked at the time it took to begin a mission in a popular DirectX-based Wintel game, Tigershark, the results were conclusive: Virtual PC is not the silver software bullet we've been waiting for.

	CorelDraw Minutes	*Adobe PageMaker* Minutes	*Microsoft Word* Minutes	*Tigershark* Minutes
Virtual PC 1.0	11:43	18:48	18:38	17:09
Reference product				
SoftWindows 95 4.0	7:40	12:34	10:38	3:02

Shorter bars are better.

Both PC emulators were tested on a Performa 6400/200 with a 2-GB hard drive, 32 MB of RAM (with 24 MB allocated for each emulator), and a 300-MB C: drive. The display was set to 640 x 480 pixels at 256 colors and was in full-screen mode.

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Infini-D 4.0
MetaCreations, Carpinteria, CA
800-472-9025 or 805-566-6200
www.metacreations.com
Reader service: circle: #403

Infini-D 4.0

$899; upgrade, $199 *(list)*

3-D-rendering, -modeling, and -animation application is great for midrange users and includes features even pros will covet.

A longtime choice of artists venturing into 3-D creativity, Infini-D moves to new heights of interface sophistication and rendering flexibility with version 4.0. Although it still can't displace high-end offerings such as those from Electric Image, Infini-D is clearly the best midrange integrated modeling, rendering, and animation application you can buy.

Infini-D 4.0's overall look and feel — borrowed heavily from 3D Studio's Windows NT program 3D Studio Max — is improved from version 3.0, with easier access to a multitude of new features. The main Command palette provides subsets of controls (for elements such as objects, surfaces, textures) as tabs. As you select items in a scene, the parameters shown in the Command palette update accordingly — you can quickly get important information on any object in your scene without wading through multiple palettes.

Infini-D's modeler, although improved, is still not the total solution for all your modeling challenges. New to Infini-D is true vertex-level and spline editing of objects (spline editing can be animated over time, allowing for easily animated organic shapes), a larger variety of shape primitives, and better lathing and extrusion tools.

Infini-D's new shape deformations — such as shear, twist, bend, and bulge — use an object-oriented method of applying effects that allows effects to be "stacked" on an object and then reordered or edited at any time. Other Infini-D 4.0 effects also benefit from this stacking capability, greatly simplifying the editing process.

The excellent beveling commands of previous versions are intact, but you still can't treat beveled edges as separate entities for applying different texture maps. Vertex-level editing of beveling hasn't changed; you must do it in a separate Workshop window instead of in the main workspace — another inconvenience that hasn't been resolved.

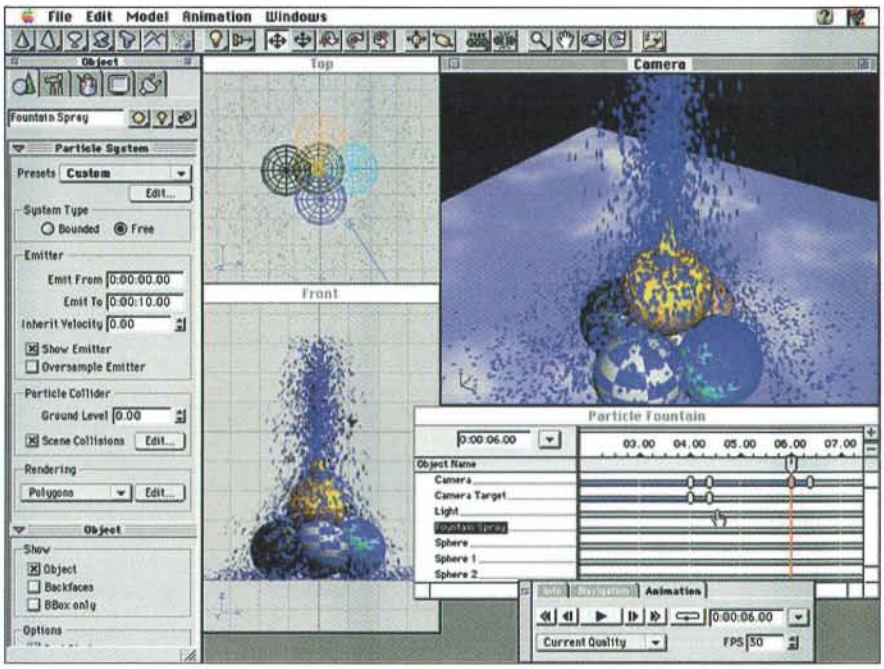
On the plus side, Infini-D's rendering speed has significantly improved. The overall rendering speed has increased by about 200 percent, and wire-frame rendering is many times faster than it was in previous versions; keep in mind, though, that overall rendering performance depends on the complexity of your 3-D scenes.

The overall quality of Infini-D's renderer has improved as well; a new scanline renderer noticeably increases the visual quality of rendered scenes. The new volumetric-lights feature — light rays with visible edges — is excellent for creative lighting and shadow arrangements. Light sources are made even more realistic with the addition of animatable lens flares, which are some of the nicest we've seen in any 3-D program under $2,000. Soft shadows have also finally made it into the application.

Special-effects specialists will absolutely love the new particle systems in Infini-D 4.0. Instead of the half-baked, cheesy particle effects so common in midrange packages, the particle systems in Infini-D 4.0 are genuinely useful for professional production work. Deeply customizable, Infini-D's particle systems can be previewed in real time in the main working views; as you drag the timeline slider around, the particle generator spits out particles interactively on the screen.

Video output is robust, with field rendering, NTSC and PAL color correction, the ability to vary aspect ratio by pixel, and the exceptionally useful ability to create and view your 3-D work directly over video.

One unique addition to the Infini-D rendering arsenal is the ability to apply Adobe Photoshop and After Effects filters to specific objects in a scene during the rendering process instead of during a time-consuming postproduction process.



Infini-D 4.0's professional-quality particle system is extremely customizable, allowing a wide variety of particle-effect looks. Dragging the timeline slider is a simple, effective way of producing a real-time preview of your animated particle effect.

You can also load an audio track into the timeline and view the waveform with respect to object-animation keyframes, making it easier to synchronize animation with audio.

The Bottom Line We're very impressed with Infini-D 4.0's interface overhaul and feature additions. Although still lacking specific abilities important to professional animators — such as inverse kinematics — Infini-D can be a valuable tool for video-production houses and multimedia-animation studios alike. If you're a current Infini-D user, upgrade to 4.0 immediately; if you're a digital artist thinking of making the move to 3-D, now's the time and Infini-D's the app. · *David Biedny*

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www.netobjects.com
Reader service: circle #404

NetObjects Fusion 2.0

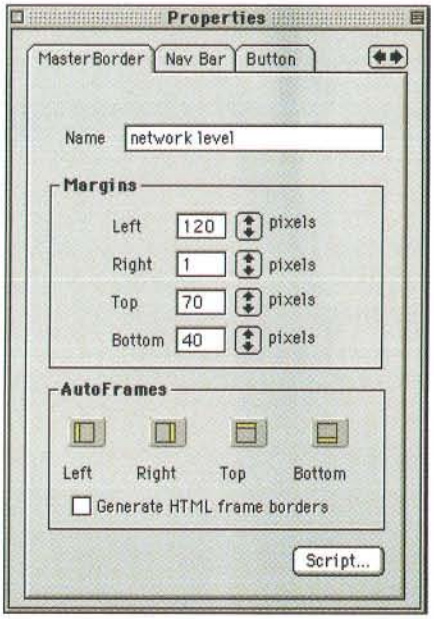
$500 *(estimated street)*; upgrade from Fusion 1.0, free

Web-site builder is powerful and improved from version 1.0 — but it's not for HTML experts.

LOADED WITH POTENTIAL when it was first released, NetObjects Fusion had several quirks that limited its usefulness — chief among them was its nonstandard interface. With version 2.0, NetObjects addressed some problems and added a few powerful new features, but Fusion's full potential is still on a leash.

Fusion's two killer features are its pasteboard layout metaphor and its automated site-management features. HTML tags? Don't need 'em. Better yet, you don't even need to know how to place text and graphics in complex tables — after you've dragged and dropped objects where you want them, the program automatically generates the HTML code, navigational buttons, and links.

In Fusion 2.0, each page of your site can be surrounded by *MasterBorders*, user-defined styles that can appear on multiple pages. For example, you could create a MasterBorder that would include a copyright notice at the bottom, a graphical navigation bar up the left side, and a page-title bar at the top. Then you could rapidly apply that same style to dozens of pages in your site. Setting up MasterBorders, however, is a slow process.



NetObjects Fusion 2.0 uses MasterBorders, user-defined styles that can appear on multiple pages. Through the Properties window, you can set attributes such as margins and frame location (through AutoFrames) as well as adjust settings for navigation bars and buttons.

In NetObjects Fusion, it's difficult to select and move objects, especially text windows, on a page. Also, although it is possible to wrap text around graphics and to place graphics within a text flow by employing HTML, you can't do either in Fusion.

Fusion still offers unmatched tools for integrating and managing a Web site, especially the autogenerated navigational elements that appear in a page's MasterBorders. What's more, Fusion now adds the ability to import sites, either from HTML files on your hard disk or from remote Web sites — however, the program's HTML-conversion abilities are spotty and pages converted from raw HTML require a lot of work to get them into a usable form. You can choose to import pages *without* converting them to Fusion format: Unconverted pages remain editable by an external HTML editor.

Although pages designed in pure HTML can be displayed in different sizes depending on the browser window, Fusion pages — created on a layout grid — can't scale based on a browser window's width. If you create a page that fits on a 14-inch monitor, for example, it'll look narrow on a 17-inch monitor.

Of course, this brings to mind just which type of user Fusion is *not* meant to serve: the hard-core, HTML-savvy Webmaster. If that's you, BBEdit 4.0 (♦♦♦♦½, October '96) or GoLive CyberStudio 1.0 (♦♦♦♦, August '97) should be your tool of choice.

The Bottom Line NetObjects Fusion 2.0 lets you quickly create attractive Web pages without having to learn any HTML or having to create complex tables for positioning. If your job includes creating and managing Web sites — especially for an intranet — you'll appreciate the ability to create large, consistent-looking sites quickly. However, if you're an HTML whiz, you won't like how Fusion limits your flexibility. · *Jason Snell*

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Image provided by Vivid Details

This image was scanned on a LinoColor SAPHIR Ultra with VisuaLab software from a 2 1/4" transparency, 1000 x 2000 dpi, 3.3 density range.

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Panasonic PanaFlat PF70

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Mitsubishi Diamond Pro 87TXM

$749 *(list)*

NEC MultiSync P750

$949 *(list)*

High-quality 17-inch monitors each employ a different technology to provide great color accuracy and crisp images for publishing pros and business users alike.

MacUser LABS **We've seen a lot of monitors** here at *MacUser*, and honestly, we thought we'd seen it all: pivots, hoods, wacky-colored bezels — you name it. But just when we thought we'd reached jaded, been-there-done-that status, we received the Panasonic PanaFlat PF70.

The first thing we noticed about the PF70 is that its screen is flat. Completely flat: flatter than a tabletop; flatter than roadkill on Route 66. So flat, in fact, that at first glance, it looks *concave* next to the two other monitors we tested, the Mitsubishi Diamond Pro 87TXM and the NEC MultiSync P750. The Diamond Pro's screen has the subtle cylindrical curve characteristic of Mitsubishi's Diamond-Tron technology, and the MultiSync's screen is slightly curved horizontally and vertically, as are all other shadow-mask-monitor screens. The less screen curve, the fewer potential problems with glare.

To find out which of the three monitors has the best overall image quality, MacUser Labs tested each with a Minolta Color Analyzer CA-100 and a Microvision SuperScript 200 meter. We also gathered a jury of image-quality experts to evaluate each monitor. The Diamond Pro and MultiSync earned high praise for their image quality; the performance of the Panasonic PanaFlat PF70, on the other hand, threw us a curve.

Panasonic PanaFlat PF70

It sounds like a winning combination: a glare-reducing flat screen coupled with a high-quality slot-mask CRT — but when we fired up the PF70, every member of our image-quality jury agreed that the concave illusion produced by the flat screen was more a distraction than a benefit. After we used the PanaFlat for a couple of weeks, however, the illusion began to dissipate.

Although the PanaFlat does have good color quality — accurate, but muted — its quality wasn't as good as that of the Diamond Pro and MultiSync monitors. And although the PanaFlat was acceptably bright, our jury and our objective testing indicated that its sharpness was adequate, although its MTF (*modulation transfer function*, a measure of sharpness) scores were the lowest of the three monitors.

Although its on-screen controls are easy to use, the menu is placed on the center of the screen, an inconvenient location for graphics pros making adjustments while using a color calibrator.

Mitsubishi Diamond Pro 87TXM

Of the three monitors we looked at, the Diamond Pro produced the best image quality. Our jury's finding that it produced accurate color agreed with our objective color-tracking results. And the Diamond Pro's high scores in our sharpness tests were confirmed by our jury results.

The Diamond Pro has an abundant array of controls. The digital on-screen control menu is placed in the lower center of the screen, so there isn't any interference with a color calibrator. Also, Mitsubishi bundles a helpful software package of adjustment controls and test screens. The Diamond Pro is the only monitor of the three that comes with ColorSync profiles.

NEC MultiSync P750

Our jury agreed that the MultiSync's color quality and brightness were quite good — the monitor also scored well in our objective testing. Its sharp reproduction of text and line art was better than that of the PanaFlat monitor and almost as good as that of the Diamond Pro monitor.

The MultiSync, like the other two monitors in this review, has a large set of digital, on-screen controls. As with the PanaFlat, however, you can't move the MultiSync's menu from its center position on the screen.

The Bottom Line Graphics pros need great image quality, and the Mitsubishi Diamond Pro 87TXM fills the bill. It also has an excellent set of controls for fine-tuning — and at $749, it's the least expensive of the three. The image quality of the NEC MultiSync P750 is essentially as good as that of the Diamond Pro, but the MultiSync costs $200 more. The Panasonic PanaFlat PF70 is a quality monitor, and its perfectly flat screen is a glare-reducing plus. But its comparatively high price and less-than-ideal image quality move it to third place among three fine monitors. · *Roman Loyola*

Photography · Adrian Ordenana

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Kai's Photo Soap ♦♦♦½

$49 *(list)*

Image-editing tool for novices is powerful but not intuitive.

As precious as gold and of even greater sentimental value, those cracked and faded photos from your past require repair. Their savior may be Kai's Photo Soap, from MetaCreations (formerly MetaTools), a low-cost photo fixer that offers an arsenal of tools for nonprofessionals who want to retouch digital images. Although learning how to use all the program's power may take work and concentration, it'll be worth the effort.

Kai's Photo Soap includes a plethora of powerful photo-fixing tools, but figuring out how to use them effectively may be a daunting task for rookie image editors.

Photo Soap's seven-room structure, described in our August '97 First Look (page 25), remains intact. After choosing which image to work on from the In Room's gallery, you move it through the Prep, Tone, Color, Detail, and Finish Rooms, working on it with a variety of photo-realistic tools before printing or saving it in the Out Room. Soap also lets you create image thumbnails and store them in virtual photo albums.

You can globally correct an image or brush changes into specific image areas. Most tools are highly effective — Soap's Smooth tool, for example, does at least as good a job as, if not better than, Adobe Photoshop's Blur tool. The Heal brush, which repairs damaged areas of an image, is similar to Photoshop's Dust & Scratches filter, but being a brush, it's easier to use.

Like all other Kai-Krause-kreated applications — such as Kai's Power Goo (♦♦♦♦, November '96), Kai's Power Tools (♦♦♦♦½, March '96), and KPT Cool Effects (♦♦♦½, July '96) — Soap has a unique love-it-or-hate-it interface: The Mac menu bar is gone, buttons appear only when the cursor passes over them, and tools have options within options that are revealed graphically by edges that change color as you near them.

It's not always clear what a tool is supposed to do, and it's sometimes confusing how to use it. For example, Soap's exceptionally powerful color-correction equalizer might be thoroughly baffling to Aunt Gertie and Uncle Bert — and they're Soap's target market. What's more, if Gert and Bert don't have a PowerPC-based system, they won't be able to run Soap at all.

The Bottom Line If you're a professional photo retoucher, don't ditch Photoshop. However, if you have a closetful of yucky but irreplaceable photos you'd like to fix, Kai's Photo Soap will provide the right tools for the job. Just be prepared for some trial and error as you get used to Soap's nonstandard — although attractive — interface. · *Sherry London*

Retrospect 4.0 and Retrospect Network Backup Kit 4.0 ♦♦♦♦♦

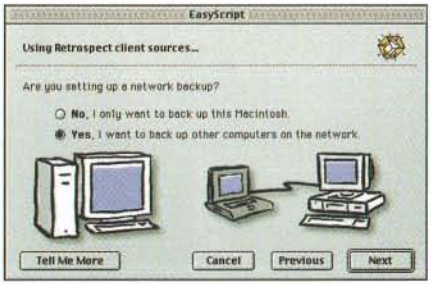
$249; upgrade, $39; Retrospect Network Backup Kit 4.0 (ten clients, includes Retrospect 4.0), $499; upgrade, $79 *(list)*

Backup software solidifies its position as the best single-user and network-capable package for the Mac, with new features and improved speed.

Shortest review in history: Retrospect. It's great. Buy it.

But since we have a full half-page to fill, let's talk about how the folks at Dantz Development continue to make the process of backing up your precious data as simple as possible. In the latest update to its market-leading backup software, Retrospect, Dantz has made setup easier and added features that make Retrospect 4.0 the best backup utility you can buy.

Retrospect 4.0's EasyScript feature asks you a few basic questions and then builds a backup routine based on your needs. In addition, Retrospect 4.0 supports TCP/IP, which works on any Mac network using Open Transport. Dantz claims a speed boost of more than 100 percent in network transfers over the previous version when you use Retrospect 4.0's TCP/IP feature over an Ethernet network. We were able to confirm this claim in an informal test, backing up three Macs to tape in an APS HyperDAT III DDS-3 tape drive. The speed of local backups is also improved slightly. Retrospect 4.0 can be set to automatically send you an e-mail status report of your backup sessions — although it requires fiddling with AppleScript to make it work just right.



Thanks to Retrospect 4.0's new EasyScript feature, you don't need to know anything about scripting to create a sophisticated backup routine.

When the inevitable happens — your hard drive crashes — you need to get your data back and get up and running as quickly as possible. Retrospect's SnapShot feature will restore your hard disk to the exact condition it was in when it was backed up, even including the positions of your desktop icons. Retrospect 4.0 adds the ability to restore from multiple SnapShots, so you can restore different versions of a file or different disk states.

Despite all this power, Retrospect remains easy to use. In addition to the flexible EasyScript feature, there's a complete help menu that explains Retrospect's many features. Although the manual is a little dry — hey, this is *backup* software — it's well illustrated and logically organized. Tech support is efficient and relatively easy to reach.

The Bottom Line There is no other backup utility that can beat Retrospect's overwhelming feature set and ease of use. Although version 4.0 holds most of its appeal for workgroups, it's a must-have for stand-alone users as well. As we said before: It's great. Buy it. · *Gene Steinberg*

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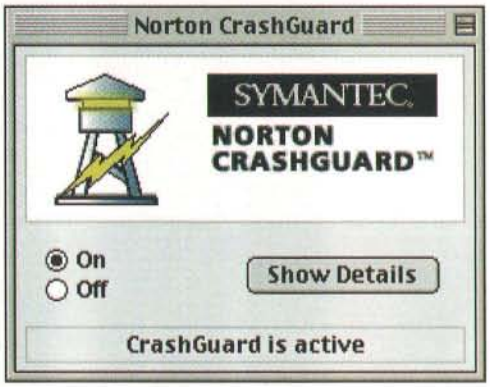
Norton Utilities for Macintosh 3.5

$99; upgrade, $49 *(list)*

Utility software offers faster disk optimization, some crash protection.

YOU BUY IT, INSTALL IT, and hope you never have to use it. But when a crisis hits and you develop a pressing need for Symantec's Norton Utilities for Macintosh 3.5, you'll find that it hasn't changed all that much from previous versions — but that's not necessarily bad. The program is still a solid, powerful disk doctor. CrashGuard, its one completely new feature, is helpful but not all that spectacular. However, although the overall package remains largely unchanged, its new delivery medium — a bootable CD-ROM — is a welcome improvement.



NUM 3.5's newest PowerPC-only feature is CrashGuard, which intercepts a crash before it happens, limits the extent of the crash, and allows you to save current files.

Other welcome changes include an expanded Apple Guide help system and a completely rewritten — and very fast — Speed Disk disk optimizer, which now lets you specify various ways to organize the files on a disk, further tuning file-access speed. Speed Disk also analyzes the contents of a disk, graphically displays the fragmentation, and also shows a preview of how a disk will look if it's optimized with the selected profile.

The new PowerPC-only CrashGuard intercepts a crash as it happens and tries to limit the extent of the crash while warning you — and allowing you — to save your current files. Although this is certainly a laudable goal, a large part of CrashGuard's benefit became part of the Mac OS with the System 7.6.1 update. Also, crashes, by their very nature, are unpredictable, and any generalized solution is doomed to a success rate of well below 100 percent.

Users of Mac OS 8 will have no choice but to upgrade to version 3.5, since several elements of previous versions — most notably Norton Disk Doctor — refuse to run under the new OS.

The Bottom Line Although the new Speed Disk and the bootable CD-ROM are useful improvements, basic recovery and prevention tools have been left untouched in Norton Utilities for Macintosh 3.5. CrashGuard is appealing but is less a cure-all than it sounds. If you desperately need faster disk optimization or a bootable CD-ROM or if you plan to move up to Mac OS 8, it's time to upgrade. Otherwise, skip it. · *Stephan Somogyi*

WebRamp M3

$349 *(list)*

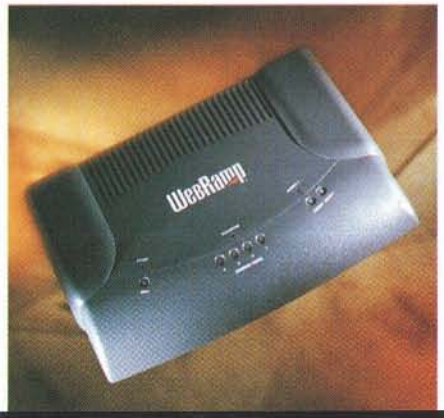
Internet-access device provides a high-speed phone-line hookup for your office LAN.

IT SOUNDS GREAT: Connect three modems to Ramp Networks' new WebRamp M3, and you'll triple the speed of your dial-up Internet connection while giving everyone in your office high-speed Internet access. Too good to be true? That depends on your situation.

The WebRamp M3 is a hybrid device that contains a four-port 10BASE-T hub, a DHCP (dynamic host connection protocol) server, an IP router, and three analog-modem ports. Once you've connected the WebRamp to your Ethernet network, anyone on the network can access the Internet.

The WebRamp's modem-sharing scheme allows three users to use one modem each, or it intelligently uses two or three modems to combine the data flowing from the ISPs into a single high-speed connection for a single — happy — user. The modem allocation is dynamic as well: For example, if you're connected to a Web site and then begin an FTP download, the file transfer will be offloaded to the next available modem so that it won't compete for bandwidth with your Web linkup.

Although the WebRamp M3 is a strong implementation of a great idea, it's not for everyone. Since you need a modem, a phone line, and an ISP account for each Internet-access port, the WebRamp doesn't make much sense for most home users. And although you can use the WebRamp M3 to surf and exchange mail, you can't use it to hook your Internet server up to the Net: The WebRamp M3 is not a full Internet gateway. Where the WebRamp M3 *does* shine, however, is in offices of five or more people where Internet access is not constant and where it doesn't make sense to give a modem to every user.



As with so many network devices these days, the WebRamp's management software is a Web browser — and Ramp Networks has kept the interface simple but complete. There's no activity log and no way to restrict access by time of day or to enable other security measures — although there is support for PAP and CHAP authentication. Also, the WebRamp has PC-standard DB9 modem ports, so beware of modems that have built-in cables with Mac-standard DIN-8 connectors — DIN-8-to-DB9 adapters are hard to find.

The Bottom Line The WebRamp M3 is a solid, innovative product — just make sure that your office is well suited to its unique capabilities. · *Shelly Brisbin*

Photography · Adrian Ordenana

Faster.

Better.

Smarter.

C600x/240 SPECIFICATIONS:

MODEL NAME	C600x/240
Processor Type	603e/240MHz
RAM	32MB
In-Line L2 Cache	1MB
CD-ROM Speed	12X
Hard Drive	3GB
Processor Bus Speed	80MHz
Video Memory	1MB
33.6 Fax/Modem	Included
External Speakers	Included
Jabra Microphone	Included
10 Base-T Ethernet	Yes

Monitor not included. Features subject to change without notice.

The SuperMac C600x with CacheDoubler technology boosts performance by up to 44%.*

CacheDoubler™ Doubles Cache Speed UMAX Exclusive

The SuperMac C600x line from UMAX offers everything you're looking for in a superior machine: from sophisticated architecture and innovative technology to a very competitive price and the best performance in its class. Plus, the C600x comes equipped with CacheDoubler, the new in-line L2 cache card exclusively from UMAX that "conquers the 603e hill," according to *Macworld* (August 1997). All this from UMAX, a company dedicated to the Mac OS system and rated #1 in both service and purchase satisfaction in a June 1997 *Macworld* poll. Get it all with the SuperMac C600x from UMAX.

High-Upgradeability PowerPC™ Mac OS MacWeek MacUser BEST BUY

For more information on where to purchase the C600x,
call **1-888-236-UMAX** or visit us at **http://www.supermac.com**

UMAX®
Computer Corporation

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* Performance statistics based on comparison to C600 without CacheDoubler. The C-series CacheDoubler upgrade card for installed base will be available in September '97.

CIRCLE **141** ON READER SERVICE CARD

MacUser

COMING SOON

DECEMBER 1997

http://www.zdnet.com/macuser/

Color Management
Consistent accurate color reproduction is critical to publishing professionals and accurate profiling of a press or proofing device is crucial to any color management system. A panel of MacUser editor's evaluates a new crop of custom profiling tools and using MacUser itself as a test printing job determines which is the best of the bunch.

Children's Software
Searching for good quality children's software can be difficult. Among the many children's software packages to choose from, MacUser has come up with its top picks of products in a variety of education and entertainment categories. In addition, the editors give parents and grown ups tips on how to purchase software for preschoolers to preteens. This comprehensive guide to children's software is a great reference for parents.

Holiday Gift Guide
If you're starting to make your shopping list, be sure to check out the long awaited MacUser editor's holiday gift guide. The editor's have chosen some great inexpensive gift ideas for under $100 such as games, software, plug-ins, and much more. This issue will be sure to get you started on your holiday shopping spree.

DECEMBER AD CLOSE:

TUESDAY, SEPTEMBER 16, 1997

Epson Stylus Color 1520, Epson Stylus Color 3000
Epson America, Torrance, CA
800-463-7766 or 310-782-0770
www.epson.com
Reader service: circle #419

Epson Stylus Color 1520

$799 *(list)*

Epson Stylus Color 3000

$1,995 *(list)*

Color inkjet printers produce great-looking tabloid-sized output — but their updated software PostScript RIP is not yet bug-free.

MacUser LABS **YOUR JAW WILL DROP** when you get your first look at output from the new Epson Stylus Color 1520 and Stylus Color 3000, the latest in Epson's fast-growing line of color inkjet printers. But that dropped jaw may quickly turn into one clenched tight in frustration: Epson's PostScript RIP has a few wrinkles that desperately need ironing out.

The Stylus Color 1520 uses the same type of print head and ink reservoirs found on the Epson Stylus Color 800 (♦♦♦♦½, June '97): a piezoelectric inkjet head fueled by one black and one three-color cartridge. At 100-percent coverage, the 1520 can print only about 21 13-x-19-inch pages before you need to replace the ink. The Stylus Color 3000 uses the same print head as the 1520 — and the 800 — but features a set of four large, individual-color ink cartridges with a potential output of 300 13-x-19-inch, 100-percent-coverage pages.

The 1520 and the 3000 each feature built-in serial and parallel ports; you can add either an Ethernet card ($399) or a LocalTalk card ($149). Each handles paper of up to 17 x 22 inches. The 3000 also supports continuous-roll paper, which can be hung on the back of the printer, enabling you to print banners up to 17 inches wide and 16 feet long.

The 3000 comes standard with Epson's StylusRIP, an Adobe-licensed PostScript RIP; the RIP is available as a $99 option for the 1520. StylusRIP is an entirely new RIP, one Epson developed in conjunction with Adobe Systems. It shows marked improvement over Epson's previous software RIPs — it's easier to install, use, and manage — but it's not yet free of bugs.

We experienced persistent problems trying to print both a QuarkXPress spread and a large Photoshop image in landscape mode. Every attempt saw the same results: The application sent the file to the software RIP, and the RIP completed its image preparation, but when it attempted to print the file, it lost connection with the printer after only a tiny portion of the image had been printed.

Our testing did not firmly indicate whether this problem was the result of difficulties with the software RIP or with Epson's Ethernet card. These difficulties didn't crop up in tests run over the serial port or in tests using other applications or files printed in portrait mode. Epson engineers — who claimed that our experience was unique — are working on the problem, and a fix should be available for downloading from the Epson Web site by the time you read this.

The Bottom Line The Epson Stylus Color 1520 and Stylus Color 3000 each generate remarkable output. The 1520 will adequately serve businesses that need high-quality, tabloid-sized images, and the 3000 should gain favor among graphics professionals with more-demanding applications — as soon as the good folks at Epson fix the problems we discovered in our testing. · *Rick Oldano*

The Epson Stylus Color 3000 (left) and Stylus Color 1520 bring Epson's astonishingly high inkjet-image quality into the large-format arena.

Fuji DS-300 Digital Camera
Fuji Photo Film, Elmsford, NY
800-788-3854 or 914-789-8100
home.fujifilm.com
Reader service: circle #420

Fuji DS-300 Digital Camera

$2,500 *(list)*

Digital camera has a lot to offer but suffers from a few glitches.

MacUser LABS **THE ONSLAUGHT OF DIGITAL CAMERAS** continues, with the release of Fuji's new DS-300, and as the category matures, the offerings continue to improve — slowly. Not only does the DS-300 offer good-quality output but it also has some attractive bells and whistles.

The DS-300 records images at resolutions of 1,280 x 1,000 pixels or 640 x 480 pixels, and the images can be stored in uncompressed TIFF format or in one of three JPEG compression schemes on Type I or Type II PC Cards. The camera has a built-in 3:1 optical zoom as well as an additional 2:1 digital zoom.

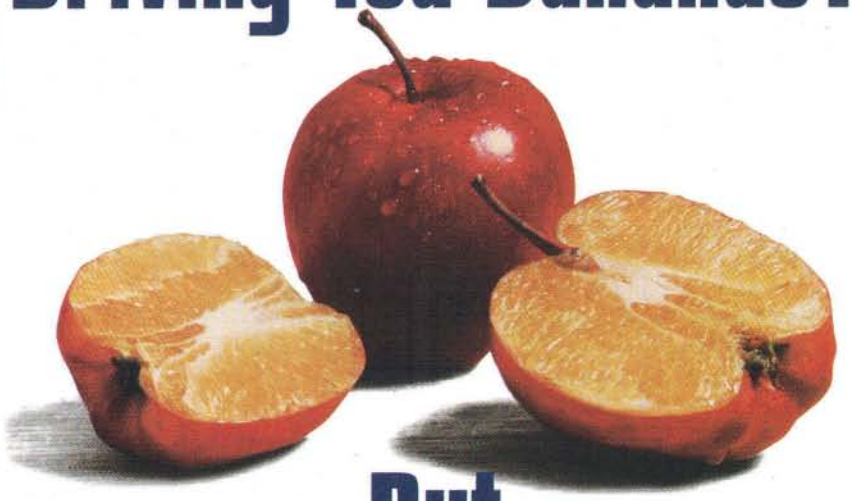
Features range from the eminently practical to the fanciful. An optional EU-D3A SCSI Extension Unit ($1,150) allows you to attach the camera as a SCSI device to your computer. It additionally provides a frame buffer, allowing you to shoot 4.5 frames per second, and stores a maximum of 12 frames before it has to write to media. Less useful for most photographers is the ability to attach a hand-held global-positioning-system device to the DS-300 to log the exact location where each picture is taken.

The DS-300's output contains very little noise and few artifacts. Although the images are soft and have a green cast, these characteristics can be easily corrected in Adobe Photoshop. The DS-300 can be attached directly to the Fuji Pictography 300 printer; prints up to 5 by 7 inches are quite sharp but begin to show some image degradation at 8 by 10 inches.

The DS-300 suffers from a few glitches. When we tried to attach the camera to a PowerBook, we continually got error messages stating that the bus was not properly terminated. Also, we never succeeded in downloading more than one image at a time.

The Bottom Line The Fuji DS-300's rich feature set and good image quality make this camera capable of filling many needs — but watch out for the file-access glitches. · *Rick Oldano*

PC Applications Driving You Bananas?



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Sometimes, to keep from going bananas, you must run a PC application on your Mac. The OrangePC® is an expansion card which allows you to run both Mac and PC programs simultaneously. It magically transforms your Apple into a dual computer platform which can support Windows®NT, NeXT® OPENSTEP®, Windows®95, Windows® 3.1 or DOS. It makes thousands of PC applications compatible with your Macintosh system.

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CIRCLE 130 ON READER SERVICE CARD

UMAX Astra 1200S
UMAX, Fremont, CA
800-562-0311 or 510-651-9488
www.umax.com
Reader service: circle #421

NEC SuperScript 1260
NEC Technologies, Boxborough, MA
800-388-8888 or 508-264-8000
www.nec.com
Reader service: circle #422

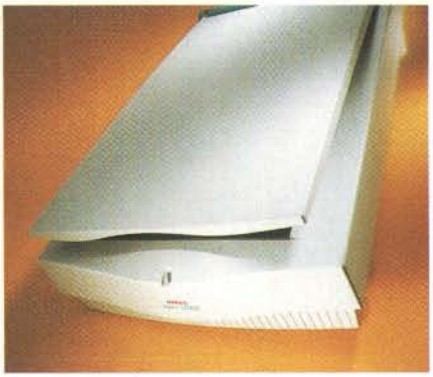
UMAX Astra 1200S

With Adobe PhotoDeluxe, $449; with Adobe Photoshop, $649 *(list)*

Color flatbed scanner doesn't improve on its predecessor, the Vista S-12.

MacUser LABS **LONG BEFORE ITS DEBUT** as a Mac-clone vendor, UMAX was best known as a top scanner manufacturer. Fortunately, UMAX continues to crank out solid, reliable scanners on a regular basis. UMAX's latest offering, the Astra 1200S, replaces the Vista S-12 (3½, February '97) as the company's small-office/home-office entry, but the Astra 1200S' image quality doesn't quite compare to that of its predecessor.

The Astra 1200S captures images at a maximum optical resolution of 600 dpi (which can be interpolated up to 9,600 dpi) in 30-bit color from its 8.5-x-14-inch scan bed. Images are acquired via VistaScan 2.3.6, which is supplied both as a Photoshop/PhotoDeluxe plug-in and as a stand-alone application that the UMAX installer places on your Apple menu. Another supplied plug-in is VistaScan Auto,



which allows the hardware and the software to decide on the optimal scanning parameters.

Our tests showed that although the scanned images were good, the sharpness, color quality, and lack of noise achieved were only equal to or not quite as good as the results achieved with the Vista S-12. The most noticeable drop-off in quality was in the Astra 1200S' relative lack of shadow detail. Further, color correction and unsharp-masking algorithms can't generate corrections as well defined or effective as those made in Photoshop, and UMAX's scanning software can't make sufficient corrections in the prescan, where they'd be the most effective.

One nice feature of the UMAX scanner is its ability to scan in CMYK color after you select an output device from among the several color printers listed on a pull-down menu. The only problem is that the list of printers has not been updated in over a year. Also, we found that images scanned in CMYK mode have more noise than those scanned in RGB and then converted to CMYK in Photoshop.

The Bottom Line Sometimes change is not for the better. The UMAX Astra 1200S has an attractive price and several nice features, but it's a step down from its predecessor, the Vista S-12. · *Rick Oldano*

Photography · Michael Falconer

NEC SuperScript 1260

$1,098 *(list)*

Monochrome laser printer is the first Adobe PrintGear-based model for the Mac, and it's fast.

MacUser LABS **POSTSCRIPT IS A WASTE OF MONEY** if the documents in your office consist mostly of word-processing files, spreadsheets, and simple grayscale graphics. But can you name a workgroup laser printer in the Mac market that doesn't have PostScript? You can't. If you buy a workgroup printer today, you may be paying for a feature you really don't need.

Get ready to pocket some extra cash, then, because there's now an alternative to the PostScript-based workgroup

printer. At $1,098, the NEC SuperScript 1260 is less expensive than other 12-ppm laser printers, because it uses PrintGear, Adobe's new alternative to PostScript. And not only is the SuperScript 1260 affordable but it's also fast and its image output is very good.

The SuperScript 1260 is equipped with 2 MB of RAM and a 60-MHz Adobe PrintGear Imaging Processor. The $799 base model of the SuperScript 1260 has only a parallel port — to use it on your Mac, you'll have to shell out an extra $299 for an Ethernet interface card. All SuperScript models include PCL-4 and can automatically switch between it and PrintGear, in case you have a mixed-platform workgroup. The SuperScript 1260 also comes with Web-based administration software, a 250-sheet letter-sized paper tray, and an 80-sheet multipurpose tray. Options include a 500-sheet paper feeder ($199), a 50-envelope cassette ($99), and an output tray ($29).

To speed-test the SuperScript 1260, we ran applications often used in offices. We compared the results with those of the $1,600 (estimated street), PostScript-based Apple LaserWriter 12/640 PS.

In every test, the SuperScript beat or tied with the more expensive Apple printer. In our Microsoft Word test, we clocked the SuperScript 1260 at 10.0 ppm and the LaserWriter at 8.3 ppm. The SuperScript kept its lead in our Microsoft Excel chart and graph tests, where it recorded a rate of 3.5 ppm — a full page and a half per minute faster than the Apple printer's 2.0 ppm. The Apple printer kept pace when printing a graphics-intensive Microsoft PowerPoint presentation; both printers achieved 4.0 ppm.

The SuperScript 1260 produces good-looking output as well — as long as you stay away from PostScript-based files. Text is crisp-looking, and grayscale output on charts, graphs, and photographs saved as TIFF files is quite good. Printing EPS files, on the other hand, results in jaggy, ugly output.

The Bottom Line If you're looking for an affordable, fast workgroup printer for your office and you don't need the graphics capabilities that PostScript provides, the NEC SuperScript 1260 fills the bill. · *Roman Loyola*

Photography · Lon Clark

Quick Clicks

Fargo Electronics Signature CD Color Printer

♦♦♦

$1,295 *(list)*

Fargo Electronics, Eden Prairie, MN
800-205-5852 or 612-941-9470
www.fargo.com
Reader service: circle #423

You've burned a CD of your favorite '80s tunes, and you want a classier label than your magic-marker skills can produce. Fargo comes to the rescue with the $1,295 Signature CD Color Printer, a pint-sized 300-x-600-dpi QuickDraw inkjet serial printer that can print directly on a specially coated CD (a pricey $9.50 each) or on jewel-case inserts.

Create text or graphics in any application, and print with Fargo's proprietary driver. No Mac templates are provided, so expect some trial and error before your image appears correctly on the CD or insert; cardboard practice sheets are $24.95 for 50. The finished CD looks professional, but we wish we'd had an easier time creating it. · *Tony Bojorquez*

KPT Actions

♦♦♦½

$49 *(list)*

MetaCreations, Carpinteria, CA
800-472-9025 or 805-566-6200
www.metacreations.com
Reader service: circle #424

If you're a devoted user of both Kai's Power Tools 3.0 (♦♦♦♦½, March '96) and Adobe Photoshop 4.0 (♦♦♦♦, March '97), you've got a treat coming: KPT Actions. Taking advantage of Photoshop 4.0's recordable Actions feature, KPT Actions provides relief to frustrated newbies, with a collection of 100 prerecorded effects. The time and energy savings are significant, and the practical results are what even Photoshop pros have been hankering for.

KPT Actions can record and save all of KPT 3's filter effects, and switching the Photoshop Actions window to Buttons mode reduces effects application to one-step events. That such convenience requires at least 16 MB of RAM should come as no shock. · *Mark Baard*

Sophisticated Circuits PowerKey Pro Model 600

♦♦♦♦½

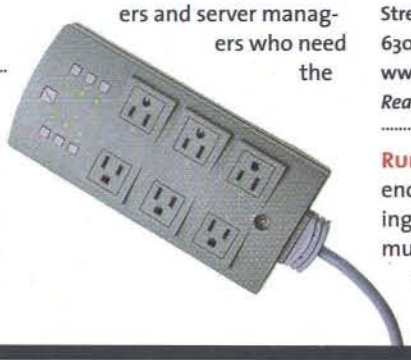
$199 *(list)*

Sophisticated Circuits, Bothell, WA
206-485-7979
www.sophisticated.com
Reader service: circle #425

Tired of driving into the office to restart that pesky Web server? If so, you need a PowerKey Pro Model 600.

Once you've plugged your Mac and its peripherals into the PowerKey's six outlets, you can schedule power-on/off sequences on a per-outlet basis, automatically restart your Mac when it crashes, and even run sophisticated remote-dial-in control scripts.

You can program the PowerKey to launch applications, type characters into your Mac, or start QuicKeys or AppleScript scripts when performing any of its power-on/off sequences. Customization can be daunting but well worth the effort for power users and server managers who need the control that the Model 600 provides. · *Jeff Pittelkau*



Photography · Michael Falconer

Father of Industrial Design: The Works of Christopher Dresser, vols. 1 & 2

♦♦♦♦½

$99 per set; individual disc, $79 *(list)*

Direct Imagination, Pasadena, CA
818-793-8387
www.dimagin.com
Reader service: circle #426

More than just clip art, the first two volumes of the Father of Industrial Design series are a history lesson; a design text; *and* a source of beautiful, inspiring, and customizable patterns. Each CD-ROM reproduces a book by Christopher Dresser, a 19th-century botanist-turned-graphic designer who blazed a new trail in design by creating patterns based not on those of the ancients but on scientific principles. Each book reproduction — The Art of Decorative Design, and Studies in Design — is in Adobe Acrobat format, and the royalty-free patterns come in Photoshop, Adobe Illustrator, Macromedia FreeHand, and MetaCreations Expression formats. If you're interested in ornamentation or want to learn something new about design, don't miss these. · *Scholle Sawyer*

NetCloak 2.1

♦♦♦♦

$195 *(list)*

Maxum Development
Streamwood, IL
630-830-1113
www.maxum.com
Reader service: circle #427

Running a Web site is tough enough, but regularly changing its appearance can be too much to handle.

Enter NetCloak, a combo WebSTAR 2.0 (♦♦♦♦½, April '97) plug-in and CGI that lets you create complex Web sites with very little extra effort by adding NetCloak-specific tags to your HTML documents. NetCloak tags can automatically insert specific text into your HTML pages, based on the time of day, the date, or even the type of browser a reader happens to be using.

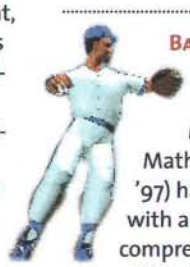
Since NetCloak allows you to easily insert text from another file anywhere in a document, it's simple to create multiple views of the same content. The only drawback is that most WYSIWYG Web authoring tools don't work particularly well with NetCloak. But if you're comfortable writing raw HTML code, NetCloak can turn that static collection of pages on your Mac Web server into a dynamic, interesting Web site. · *Jason Snell*

Major League Reading

♦♦♦♦

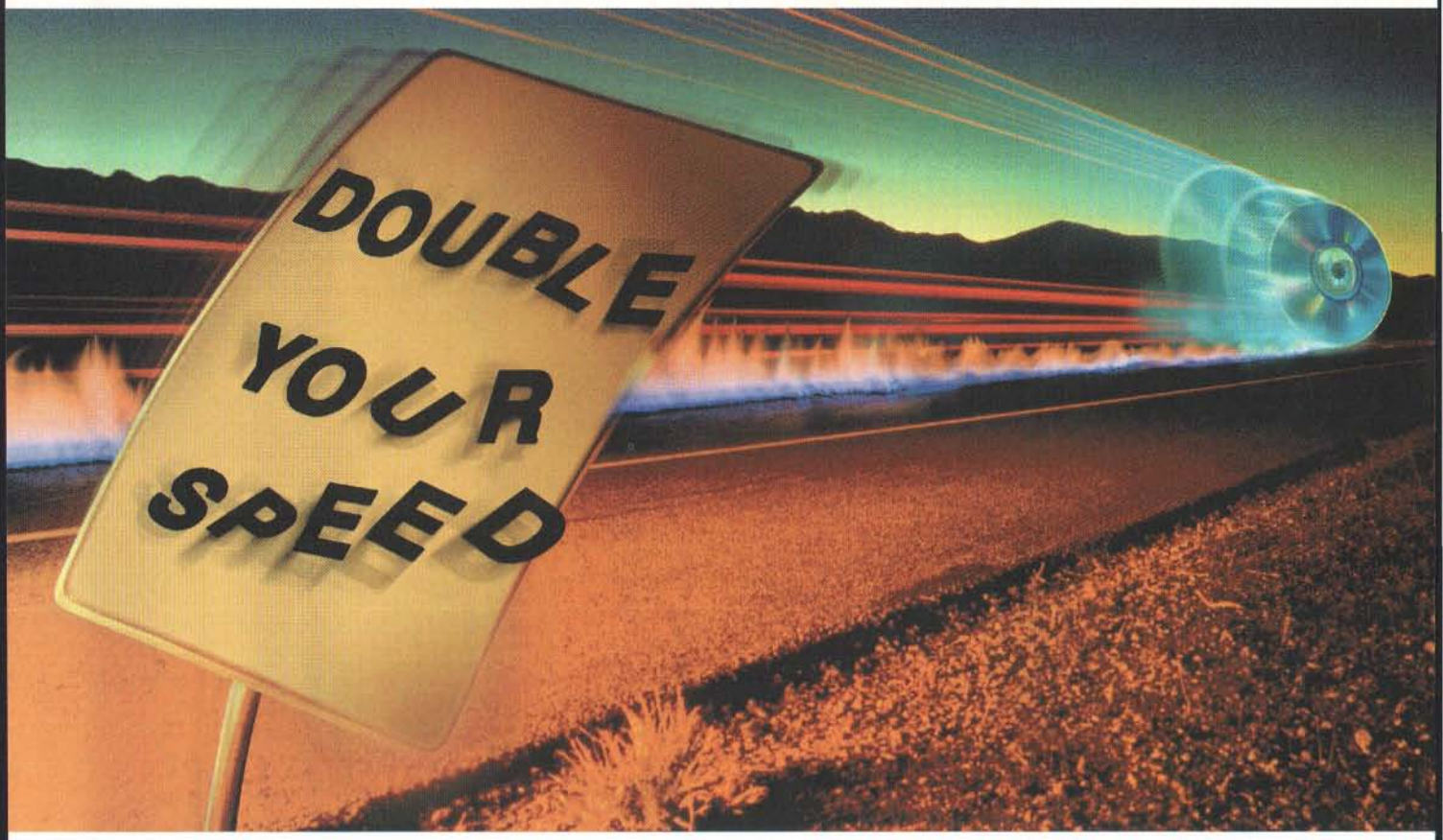
$29.99 *(list)*

Sanctuary Woods, San Mateo, CA
800-943-3664 or 415-286-6000
www.ah-hah.com
Reader service: circle #428



Batter up! It's baseball season, and the maker of Major League Math (♦♦♦♦, January '97) has hit a home run with a new reading-comprehension game in which kids compete with one another or with their Mac.

Select your favorite team, and pick what kind of pitch to throw or whether you'd like to try for a homer or a base hit. Questions are presented in a variety of ways: rapid-fire succession, hangman, and fill in the blanks, to name a few. The game also contains baseball trivia and a set of tutorials called Coach's Corner. A separate Pro Pack with more activities can be purchased for $9.95. · *LaMont Ridgell*



Using breakthrough LIMDOW® technology, Maxell brings you super-fast direct OverWrite Magneto Optical Disks.

LIMDOW (Light Intensity Modulation Direct OverWrite) technology boosts writing speeds by up to 100% over current Magneto Optical (MO) disks. That's because it requires only a single pass to rewrite new data to a disk—eliminating the need for erasing.

Now you can transfer data at an impressive 4.0 MB/second, and still have the security and convenience of a removable media with random access. Maxell's line of direct OverWrite MO disks are ideal for data storage, document imaging, file management, and multimedia applications.

On top of doubling your speed, Maxell's LIMDOW disks offer you the highest capacities available—640 MB on a 3.5-inch disk and 2.6 GB on a 5.25-inch disk. Plus, they'll be there for you down the road with durability rated at 1,000,000 rewrite cycles and an archival life of over 30 years! Look for LIMDOW capable drives from Nikon, Fujitsu, Hitachi, Pinnacle Micro, Most, Mitsubishi Chemical, Konica, and others.

Check out Maxell's entire line of data storage solutions. Whether you use floppies, cartridges, cassettes, CDs, optical disks or laser servo disks, you can count on Maxell's quality. Plus, Maxell products are backed by a lifetime warranty.

Put the "pedal to the metal" with the blazing rewrite speeds of Maxell's direct OverWrite MO disks. Got questions? Call our tech support center, or get our FREE product brochure by calling 1-888-2-Maxell (262-9355). Check out our Website at www.maxell.com

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Maxell Canada, 111 Staffern Drive, Concord, Ontario, Canada L4K 2R2 • (905) 669-8107

CIRCLE **22** ON READER SERVICE CARD

Buyers Guide

SHORT LIST Multimedia

Our editors recommend these top products, based on reviews published in MacUser

3-D AND ANIMATION

Animation Software, Production	**Electric Image Broadcast 2.7.5** Electric Image	The Big Kahuna of professional-quality animation tools — if this app can't do it, it can't be done.	♦♦♦♦ Jan. '97	$2,995	888-736-3371 www.electricimage.com
Authoring Software, Business	**SuperCard 3.0** Allegiant Technologies	For adding multimedia capability to your business Web presence, there's no better tool.	♦♦♦♦½ Aug. '97	$329	800-255-8258 www.allegiant.com
Authoring Software, Education	**HyperStudio 3.1** Roger Wagner Publishing	Easy to learn and use, so educators can concentrate on teaching rather than coding.	♦♦♦♦ Oct. '97	$199	800-497-3778 www.hyperstudio.com
Authoring Software, Production	**Macromedia Director 6** Macromedia	This most recent version of a time-tested authoring stalwart vaults it back to No. 1.	♦♦♦♦½ Oct. '97	$999	800-326-2128 www.macromedia.com
3-D-Modeling Software, Multimedia	**Infini-D 4.0** MetaCreations	Even with more features than you'd think one app could hold, it's still a pleasure to use.	♦♦♦♦½ Oct. '97	$899	800-472-9025 www.metacreations.com
3-D-Modeling Software, Production	**form•Z 2.9** auto•des•sys	Fast, full-featured package gives professional 3-D artists an unprecedented degree of control.	♦♦♦♦ Sep. '97	$1,495	614-488-8838 www.formz.com
3-D-Type Utility	◄ **LogoMotion 2.0.1** MetaCreations	You'll be impressed at how easy it is to transform 2-D type into a spectacular 3-D animation.	♦♦♦♦ Sep. '96	$149	800-472-9025 www.metacreations.com
Vector-Animation-Authoring Software	**Macromedia Flash 2** Macromedia	Now you can create lively vector-based animations that download quickly and adapt to screen size.	♦♦♦♦ Sep. '97	$199 estimated street	800-457-1774 www.macromedia.com

AUDIO AND VIDEO

Audio-Editing Software, Multimedia	**DECK II 2.5** Macromedia	There's no easier app for making the tape-to-digital transition than this powerful audio editor.	♦♦♦♦ Sep. '96	$339	800-457-1774 www.macromedia.com
Audio-Editing Tool, Production	**Digidesign ProTools III** Digidesign	If you're an old digital-audio pro, you already know; if you're a new pro, prepare to be impressed.	♦♦♦♦* Sep. '96	$7,995	800-333-2137 www.digidesign.com
Digital-Video Card, Multimedia	**Truevision Bravado 1000** Truevision	It doesn't have to cost an arm and a leg to capture sharp, clean, full-motion, full-screen video.	♦♦♦♦ July '97	$699 estimated street	800-522-8783 www.truevision.com
Digital-Video Card, Production	**Truevision Targa 2000 RTX Digital Video System** Truevision	Dual-stream video, real-time transitions, a convenient breakout box — and a bargain.	♦♦♦♦♦ Aug. '97	$10,995	800-522-8783 www.truevision.com
Dynamic-Content-Preparation Software	◄ **Media Cleaner Pro 2.0** Terran Interactive	This indispensable tool optimizes your video and motion-graphics files for CD-ROM and the Web.	♦♦♦♦♦ Sep. '97	$359	800-577-3443 www.terran-int.com
Soundtrack-Creation Software	**SmartSound for Multimedia 1.6** Sonic Desktop Software	Use this versatile, powerful tool to design the perfect soundtrack, or let it create one for you.	♦♦♦♦½† Sep. '97	$199	800-454-1900 www.sonicdesktop.com
Software Synthesizer, Entry-Level	**CyberSound Studio** InVision Interactive	Great sounds, versatile editing capabilities, a clean interface, a free keyboard — any questions?	♦♦♦♦‡ Apr. '97	$99	800-468-5530 www.cybersound.com
Special-Effects-Generation Software	**Adobe After Effects 3.0** Adobe	Simply put, After Effects is the undisputed leader in Mac video postproduction; use it or lose.	♦♦♦♦♦ Mar. '96	$995	800-685-3505 www.adobe.com

*Review and rating are only for software component, ProTools PowerMix 3.2.

†Rating is for previous version, SmartSound for Multimedia 1.5.1.

‡Review was published in *MacUser*'s online edition only.

All prices are suggested retail (list) unless otherwise noted.

MacUser's CPU Report Cards
Find MacBench scores, mouse ratings, and detailed information for shipping Mac OS models at www.macuser.com/cpu

MacUser LABS MacUser Report Cards Mac OS Systems

Which Mac?

The most comprehensive Mac roundup ever: All 70 Mac OS desktop systems, reviewed and rated

It's all happening so fast. Six companies, seventy systems, scads of options, a plethora of price points — all changing faster than any one person can track. If you're in the market for a Mac OS system, how can you navigate this rapidly mutating morass of minutiae and find the clear, concise information you need in order to make an educated purchase?

You turn to *MacUser*, of course. We've already done all the work for you — and we'll continue to do so.

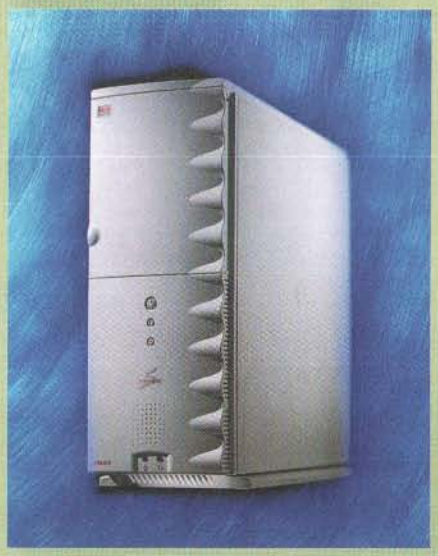
For this first in a series of quarterly updates, our experienced — and unforgiving — MacUser Labs staff reevaluated and assigned new, updated mouse ratings to each and every one of the 70 currently shipping Mac OS desktop systems. Testing was conducted with MacBench 4.0, our industry-standard benchmark software, which replicates a wide array of tasks performed by the top 11 Mac applications. While this painstaking testing was under way, our indefatigable — and fastidious — researchers gathered a broad range of statistics on each system's hardware configuration, software bundle, industrial design, ease of maintenance, upgradability, service and support policies, and price.

We then divided all 70 systems into three price-based categories: top-of-the-line, midrange, and budget. Keeping in mind the specific needs and bank accounts of users who shop in each category, we created a complex statistical model, fed it the mountain of data that had been obtained by MacUser Labs and our researchers, and then watched as our analytical Frankenstein generated the winners in each category and mouse ratings for each system.

Of course, we opinionated *MacUser* editorial types were not about to blindly accept the pronouncements of any statistical engine, so we assembled a review

Top-of-the-Line Macs

$2,750 and up



Top-flight performance, a great hardware/software bundle, sterling support, and a surprisingly slim price tag distinguish our recommended Top-of-the-Line Mac, the UMAX SuperMac S910/250.

If you make your living grinding giant image, layout, or video files through your Macintosh, you know that power, in the long run, is more important than price. Keeping this fact in mind, our ratings for top-of-the-line Macs (those priced over $2,750) favor raw speed, as measured by MacBench 4.0, over price. For professional Mac jockeys, the hardware bundle, overall design and accessibility, and support are also important; they heavily influenced our decisions as well.

Competition among high-performance Mac OS systems is intense — and it was not easy to choose between one of Power Computing's sizzling PowerTower Pro systems and UMAX's just-released SuperMac S910/250. All four top-rated systems are blindingly fast and well equipped. In the final analysis, however, the great price, warranty, and hardware bundle of the SuperMac S910/250 tipped the balance in UMAX's favor.

Photography · Mario Parnell

MacUser LABS Ultimate Performers

- **Power Computing** PowerTower Pro 200 RAID
- **Power Computing** PowerTower Pro 225 RAID
- **Power Computing** PowerTower Pro 250
- **UMAX** SuperMac S910/250
- **Motorola** StarMax 5000/200
- **UMAX** SuperMac S900/250
- **Apple** Power Mac 6500/275 (Creative)
- **Apple** Power Mac 6500/300
- **APS** M•Power 604e/200 4GB/IMS
- **Motorola** StarMax 5000/275
- **Motorola** StarMax 5000/300-G
- **Power Computing** PowerTower Pro 225
- **UMAX** SuperMac S900/200
- **UMAX** SuperMac S900/225
- **UMAX** SuperMac S900/233
- **Apple** Power Mac 8600/200
- **Apple** Power Mac 9600/200
- **Apple** Power Mac 9600/233
- **Motorola** StarMax 4000/200 MT Enterprise
- **UMAX** SuperMac S900/180

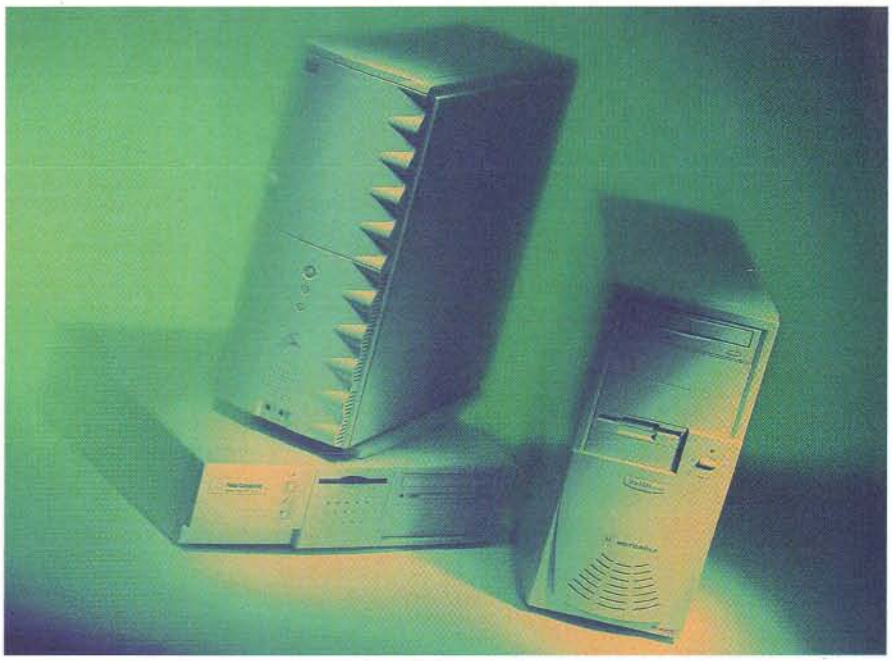
MacUser BEST BUY
Listing is alphabetical within groups of equal mouse ratings.

committee consisting of four top editors and MacUser Labs veterans, with a combined Mac-market experience of over 50 years. This team pored over each suggested rating and the data that had produced it and tweaked the ratings as their expertise and insight deemed necessary.

The results of their deliberations can be found on the next few pages: Best Buy recommendations in each of the three categories and a comprehensive listing — and rating — of all other Mac OS systems. In each category, as you'll see, there are multiple excellent choices — you may even find a system that fits your specific needs better than our suggested pick.

If you need more information on any system, check out *MacUser*'s online edition, where you'll find detailed CPU Report Cards for all shipping systems — including ones that have appeared since the time of our testing for this issue. If you want to test your own Mac to find out how it stacks up against those listed here, you can download a free copy of MacBench 4.0 from the CPU Report Cards page, at www.macuser.com/cpu.

However, if you're currently the vaguely dissatisfied owner of a Mac LC, a once proud IIfx, or even a first-generation Power Mac, be forewarned: After comparing your antique Macintosh with one of today's speedsters, you won't be satisfied until there's a fresh dent in your bank account — and a ton of power on your desk. · *Rik Myslewski*



Photography · Giampiero Benvenuti

MacUser *Executive Editor Rik Myslewski remembers when there was but one Macintosh. Senior Project Leader Jeffy Milstead managed the testing for this report; Assistant Editor LaMont Ridgell managed the research. They're both recovering nicely, thank you.*

	Price As Tested	Processor/ Clock Speed (MHz)	Bus Speed/RAM/ Hard Drive/L2 Cache	MacBench 4.0 Processor Score	Disk Score	Publishing Disk Score	Graphics Score	Lo-Res Publishing Graphics Score
♦♦♦♦½	$5,780	604E/200	50MHz/32MB/8GB/1MB	536	558	428	558	523
♦♦♦♦½	$6,280	604E/225	45MHz/32MB/8GB/1MB	539	480	475	538	516
♦♦♦♦½	$4,495	604E/250	50MHz/32MB/2GB/1MB	597	470	326	653	665
♦♦♦♦½	$4,395	604E/250	50MHz/64MB/4GB/1MB	597	395	392	561	527
♦♦♦♦	$2,999	604E/200	50MHz/32MB/4.3GB/512K	464	416	264	443	457
♦♦♦♦	$4,899	604E/250	50MHz/32MB/2.1GB/512K	528	393	364	592	558
♦♦♦½	$2,800	603E/275	50MHz/32MB/4GB/512K	423	215	240	338	*
♦♦♦½	$2,800	603E/300	50MHz/64MB/4GB/512K	436	214	232	315	*
♦♦♦½	$4,259	604E/200	40MHz/160MB/4GB/512K	415	295	272	480	450
♦♦♦½	$2,799	603E/275	50MHz/32MB/4.3GB/512K	427	385	260	384	392
♦♦♦½	$3,399	603E/300	50MHz/32MB/4.3GB/512K	441	270	268	472	419
♦♦♦½	$3,695	604E/225	45MHz/32MB/2GB/1MB	461	339	264	528	494
♦♦♦½	$2,995	604E/200	50MHz/32MB/2GB/512K	408	323	249	531	522
♦♦♦½	$3,495	604E/225	45MHz/32MB/2GB/512K	410	293	276	548	522
♦♦♦½	$3,195	604E/233	47MHz/32MB/2.1GB/512K	493	322	276	520	487
♦♦♦	$3,200	604E/200	50MHz/32MB/2GB/256K	318	105	179	444	424
♦♦♦	$3,700	604E/200	50MHz/32MB/3.9GB/512K	409	363	342	508	478
♦♦♦	$4,200	604E/233	47MHz/32MB/4GB/512K	428	190	247	553	521
♦♦♦	$3,099	603E/240	40MHz/32MB/2.5GB/512K	367	189	184	366	364
♦♦♦	$2,795	604E/180	50MHz/32MB/2GB/512K	377	320	248	494	493

Best performer(s) in each test

All products, configurations, and prices are as of July 15, 1997.

*Apple Power Mac 6500 systems were not able to run the MacBench 4.0 Publishing Graphics test.

MACBENCH 4.0 SCORES ARE RELATIVE TO THOSE OF AN APPLE POWER MAC 6100/60 WITH A 30-MHZ MEMORY BUS, A 250-MB HARD DRIVE, 2 MB OF BUILT-IN GRAPHICS RAM, AND NO L2 CACHE. THIS BASELINE SYSTEM IS ASSIGNED A SCORE OF 100. ALL SYSTEMS ARE TESTED AS CONFIGURED BY VENDORS BUT WITH APPLETALK TURNED OFF AND VIRTUAL MEMORY TURNED ON. WE SET SCREEN RESOLUTION TO 640 X 480 PIXELS WITH A BIT DEPTH OF 8 BITS (256 COLORS).

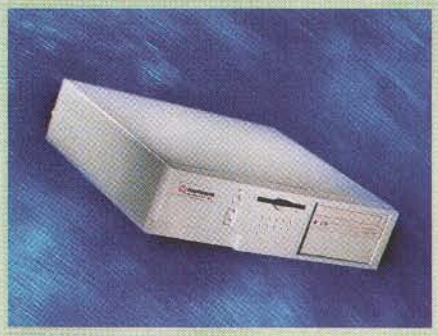
Apple Computer
Cupertino, CA
800-538-9696 or 408-996-1010
www.apple.com

APS Technologies
Kansas City, MO
800-568-2891 or 816-920-4109
www.apstech.com

Motorola
Tempe, AZ
800-759-1107 or 512-434-1526
www.mot.com/computer/starmax

Midrange Macs

$1,750 to $2,750



The only thing middle-of-the-road about our recommended Midrange Mac, the Power Computing PowerCenter Pro 210, is its price — it's more than fast enough to keep up with its big-ticket competition.

A midrange Mac — one used mostly for business and productivity applications — should be a balanced system, equally at home with RAM-hungry Excel, disk-thrashing FileMaker Pro, and such CPU-stressing brutes as Microsoft Word 6.0.1. Accordingly, we used a balanced approach to our evaluation of midrange Macs (those priced between $1,750 and $2,750), prizing speed, hardware and software bundles, and service and support, among other factors.

Although there are several well-equipped midrange systems available at good prices — with the Motorola StarMax 5000/225 being an especially attractive example — the scorching speed of the Power Computing PowerCenter Pro 210 vaults that system ahead of its competitors. A couple of Apple's Power Mac 6500 Business and Education bundles also rate high marks, but the company's well-designed Power Mac 7300 series suffers from an inflated price tag.

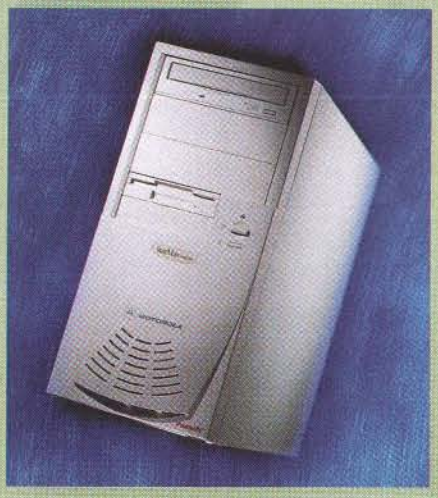
MacUser LABS — Thoroughbred Workhorses

- **Motorola** StarMax 5000/225
- **Power Computing** PowerCenter Pro 210
- **Apple** Power Mac 6500/225 (Education)
- **Apple** Power Mac 6500/250 (Business)
- **Motorola** StarMax 3000/240 MT
- **Motorola** StarMax 3000/240 MT Enterprise
- **Motorola** StarMax 3000/240 MT Soho
- **Motorola** StarMax 4000/160 MT
- **Motorola** StarMax 4000/200 MT
- **Power Computing** PowerCenter Pro 180
- **Power Computing** PowerTower Pro 200
- **UMAX** SuperMac C600e/200
- **UMAX** SuperMac C600x/280
- **Apple** Power Mac 4400/200 (Business)
- **Apple** Power Mac 6500/225
- **Apple** Power Mac 6500/250
- **Apple** Power Mac 6500/250 (Education)
- **APS** M•Power 604e/200
- **APS** M•Power 604e/200
- **UMAX** SuperMac C600/240
- **UMAX** SuperMac J700/180
- **Apple** Power Mac 4400/200 (PC Compatible)
- **Apple** Power Mac 7300/180
- **APS** M•Power 603e/200
- **APS** M•Power 604e/200 Tower
- **Power Computing** PowerBase 240
- **PowerTools** Infiniti 4200 Pro Bundle
- **UMAX** SuperMac J700/150
- **Apple** Power Mac 7300/200

MacUser BEST BUY
Listing is alphabetical within groups of equal mouse ratings.

Budget Macs

under $1,750



If you're buying a Mac for your home or small business, you want a great bundle, long-term service and support, and a penny-pinching price: The Motorola StarMax 3000/200 MT has it all.

Photography: Mario Parnell

If you read the right-hand column of a restaurant menu first, you're also likely to have a heart-to-heart talk with your checkbook before shopping for a Mac OS system. When evaluating budget Macs (those available for under $1,750), we considered affordability to be more important than raw power. We also kept in mind the importance of a comprehensive software bundle and a vendor's long-term commitment to service and support.

Two systems from UMAX — the speedy, inline-cache-equipped SuperMac C600x/240 and the astonishingly low-priced SuperMac C500LT/180 — merit high praise, but our choice for top honors among the budget systems is the well-rounded Motorola StarMax 3000/200 MT. Its excellent software bundle and five-year warranty are certain to be appreciated by anyone computing on a shoestring.

MacUser LABS — Power to the People

- **Motorola** StarMax 3000/180 MT Soho
- **Motorola** StarMax 3000/200 MT
- **UMAX** SuperMac C500LT/180
- **UMAX** SuperMac C600x/240
- **Motorola** StarMax 3000/180 DT
- **Motorola** StarMax 3000/180 MT
- **Motorola** StarMax 3000/200 DT
- **Apple** Performa 6400/200
- **APS** M•Power 603e/200 (desktop)
- **Power Computing** PowerBase 180
- **UMAX** SuperMac C500i/180
- **UMAX** SuperMac C600/180
- **Apple** Power Mac 4400/200
- **APS** M•Power 603e/180 (desktop)
- **APS** M•Power 603e/240
- **Power Computing** PowerBase 200
- **Power Computing** PowerCenter 150
- **PowerTools** Infiniti 3200 Smart Bundle
- **UMAX** SuperMac C600/200
- **Apple** Performa 6400/180
- **PowerTools** Infiniti 3180

MacUser BEST BUY
Listing is alphabetical within groups of equal mouse ratings.

Power Computing
Round Rock, TX
800-999-7279 or 512-246-7807
www.powercc.com

PowerTools
Austin, TX
800-891-4307 or 512-891-0646
www.pwrtools.com

UMAX Computer
Fremont, CA
800-232-8629 or 510-651-4000
www.supermac.com

	Price As Tested	Processor/ Clock Speed (MHz)	Bus Speed/RAM/ Hard Drive/L2 Cache	MacBench 4.0 Processor Score	Disk Score	Publishing Disk Score	Graphics Score	Lo-Res Publishing Graphics Score
♦♦♦♦½	$1,999	603e/225	50MHz/32MB/2.5GB/512K	399	297	194	355	353
♦♦♦♦½	$2,485	604e/210	60MHz/32MB/2GB/1MB	568	383	329	437	462
♦♦♦♦	$1,799	603e/225	50MHz/32MB/2GB/256K	320	211	256	303	*
♦♦♦♦	$2,300	603e/250	50MHz/48MB/4GB/256K	332	202	231	314	*
♦♦♦♦	$2,299	603e/240	40MHz/32MB/2.5GB/512K	376	342	241	324	326
♦♦♦♦	$2,499	603e/240	40MHz/32MB/2.5GB/512K	376	342	241	324	326
♦♦♦♦	$2,499	603e/240	40MHz/32MB/2.5GB/512K	376	342	241	324	326
♦♦♦♦	$1,899	604e/160	40MHz/32MB/2.5GB/512K	331	182	183	317	331
♦♦♦♦	$2,699	604e/200	40MHz/32MB/2.5GB/512K	421	409	263	396	395
♦♦♦♦	$2,085	604e/180	60MHz/32MB/2GB/1MB	533	339	209	405	428
♦♦♦♦	$2,695	604e/200	50MHz/16MB/2GB/1MB	452	341	266	504	484
♦♦♦♦	$1,895	603e/200	40MHz/16MB/2GB/512K	349	262	268	302	270
♦♦♦♦	$2,395	603e/280	40MHz/32MB/4.3GB/1MB	511	258	254	342	345
♦♦♦½	$1,799	603e/200	40MHz/32MB/2GB/256K	284	195	185	280	278
♦♦♦½	$1,800	603e/225	50MHz/32MB/3.5GB/256K	320	211	256	303	*
♦♦♦½	$2,000	603e/250	50MHz/32MB/4GB/256K	336	213	233	320	*
♦♦♦½	$2,099	603e/250	50MHz/32MB/3GB/256K	332	202	231	314	*
♦♦♦½	$1,821	604e/200	40MHz/24MB/2.5GB/512K	418	265	168	373	386
♦♦♦½	$1,981	604e/200	40MHz/32MB/3GB/512K	420	196	192	361	361
♦♦♦½	$1,795	603e/240	40MHz/24MB/2GB/256K	299	209	219	294	254
♦♦♦½	$1,995	604e/180	50MHz/24MB/2GB/512K	376	181	187	468	429
♦♦♦	$2,399	603e/200	40MHz/32MB/2GB/256K	284	195	185	280	278
♦♦♦	$2,300	604e/180	45MHz/16MB/2GB/256K	330	168	177	383	374
♦♦♦	$1,758	603e/200	40MHz/32MB/3GB/512K	314	234	159	280	287
♦♦♦	$2,558	604e/200	40MHz/32MB/4GB/512K	420	196	192	361	361
♦♦♦	$1,895	603e/240	40MHz/16MB/1.2GB/256K	336	262	170	302	301
♦♦♦	$2,244	604e/200	40MHz/32MB/3GB/512K	425	309	272	383	395
♦♦♦	$2,199	604/150	50MHz/16MB/2GB/512K	298	256	207	226	258
♦♦½	$2,700	604e/200	50MHz/32MB/2GB/256K	358	83	170	455	433

Best performer in each test

All products, configurations, and prices are as of July 15, 1997.

*Apple Power Mac 6500 systems were not able to run the MacBench 4.0 Publishing Graphics test.

	Price As Tested	Processor/ Clock Speed (MHz)	Bus Speed/RAM/ Hard Drive/L2 Cache	MacBench 4.0 Processor Score	Disk Score	Publishing Disk Score	Graphics Score	Lo-Res Publishing Graphics Score
♦♦♦♦½	$1,395	603e/180	40MHz/32MB/2.5GB/256K	298	240	227	248	251
♦♦♦♦½	$1,499	603e/200	40MHz/32MB/2.5GB/512K	348	295	195	263	271
♦♦♦♦½	$945	603e/180	40MHz/16MB/1.2GB/256K	300	220	219	275	248
♦♦♦♦½	$1,695	603e/240	40MHz/32MB/3GB/1MB	481	314	278	351	296
♦♦♦♦	$1,249	603e/180	40MHz/16MB/1.2GB/256K	287	200	188	253	249
♦♦♦♦	$1,249	603e/180	40MHz/32MB/2.5GB/256K	298	240	227	248	251
♦♦♦♦	$1,299	603e/200	40MHz/16MB/1.2GB/256K	273	166	176	216	232
♦♦♦½	$1,400	603e/200	40MHz/16MB/2.4GB/256K	258	163	167	242	218
♦♦♦½	$1,249	603e/200	40MHz/24MB/2.4GB/256K	311	177	177	258	253
♦♦♦½	$1,295	603e/180	40MHz/16MB/1.2GB/256K	271	204	174	252	254
♦♦♦½	$1,195	603e/180	40MHz/16MB/1.2GB/256K	268	218	208	277	246
♦♦♦½	$1,295	603e/180	40MHz/16MB/1.2GB/256K	259	207	196	256	225
♦♦♦	$1,700	603e/200	40MHz/16MB/2GB/256K	284	195	185	280	278
♦♦♦	$1,399	603e/180	40MHz/32MB/1.2GB/256K	297	170	171	256	247
♦♦♦	$1,672	603e/240	40MHz/24MB/2.5GB/512K	375	242	161	304	310
♦♦♦	$1,495	603e/200	40MHz/16MB/1.2GB/256K	285	209	175	267	265
♦♦♦	$1,495	604/150	50MHz/16MB/1GB/512K	307	201	167	297	293
♦♦♦	$1,640	603e/200	40MHz/16MB/2GB/256K	315	260	259	286	288
♦♦♦	$1,495	603e/200	40MHz/16MB/2GB/256K	280	207	219	264	239
♦♦½	$1,399	603e/180	40MHz/16MB/1.6GB/NONE	184	123	128	128	150
♦♦½	$1,644	603e/180	40MHz/16MB/2GB/256K	299	234	235	243	263

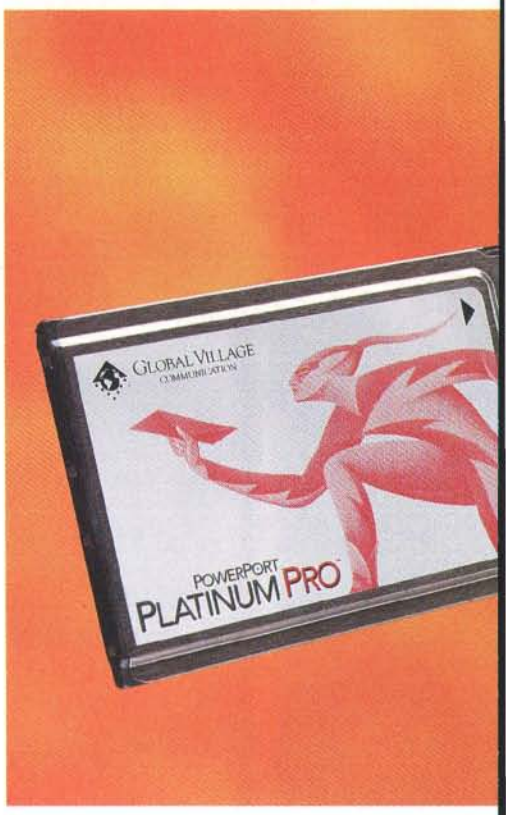
Best performer in each test

All products, configurations, and prices are as of July 15, 1997.

MacUser's Mouse Ratings
Search through ratings and reviews for more Mac modems at www.macuser.com/mouse.html

PowerBook PC Card Modems

The latest PowerBook PC Card modems are not only fast but are also very reliable



THE LIFELINE OF telecommunication from your PowerBook to your e-mail server, the remote-access server at work, fax machines, or Internet service providers starts with a modem. And that PowerBook modem needs to be fast and reliable, because time is money — especially when you're using someone else's phone line.

Today's PowerBook modems are not only fast and reliable but they also incorporate many features besides basic modem functions. Some of them provide plug-in connectivity, with a 10BASE-T port, and a few provide direct-cellular-connection capability.

MacUser Labs tested five PowerBook modems for reliability and speed. The modems we tested — the Dayna CommuniCard PLUS, Global Village PowerPort Platinum Pro, U.S. Robotics Megahertz 33.6, Ositech Mac Jack of Diamonds, and Zoom PC Card V.34C Plus — are 33.6-kbps PC Card modems that can slide right into the PC Card slot of current PowerBooks. We discovered that most worked well — four had a successful-connection rate of at least 97 percent, and all five reached average file-transfer rates of over 6 kilobits per second.

Let's Negotiate

To run our tests, we used the modem-testing facilities at ZD Labs, in Foster City, California. We called our host modem, a Motorola ModemSURFR, well over 150 times, each call made with a different set of noise and signal-degradation impairments created by a line simulator, to simulate typical phone-line conditions. The conditions ranged from new, clean, local lines to aged, noisy, long-distance lines.

The most-reliable modems we tested were the Dayna CommuniCard PLUS and the Global Village PowerPort Platinum Pro, each with a successful-connection rate of 98 percent. The U.S. Robotics Megahertz 33.6 and the Ositech Mac Jack of Diamonds also did well, each with a success rate of around 97 percent.

The most disappointing performer was the Zoom PC Card V.34C Plus, which was unable to connect when there were challenging line impairments and thus achieved a success rate that barely reached 70 percent.

The Global Village PowerPort Platinum Pro, the U.S. Robotics Megahertz 33.6, and the Zoom PC Card V.34C Plus support the protocols necessary for using modems over cellular-phone connections. None of the modems comes with a cell-phone adapter, which shouldn't surprise anyone; because of the vast number of cell-phone types, the type of cable a purchaser will need will vary.

If you need cellular capability, keep in

Photography · Steven Underwood

Making the Connection *Features and test results*

In order to test each modem's ability to connect properly, we made well over 150 calls, using various noise and signal-degradation impairments created by a line simulator, to simulate typical phone-line conditions. The connections ranged from very clean to very noisy. The successful-connection rate for each modem is shown here as a percentage of all phone calls attempted. If we were able to make a connection, we performed a file transfer and recorded the speed of the transfer, in

Rating	*Product*	*List Price*	*10BASE-T Port*	*Cellular-Ready*	*Fax Software*	*Terminal Software*	*Warranty*
✓ ♦♦♦♦	**Global Village** PowerPort Platinum Pro	$349	●	●	GlobalFax	ZTerm	5 years
✓ ♦♦♦♦	**U.S. Robotics** Megahertz 33.6	$350	●	●	Fax Action	ZTerm	5 years
♦♦♦½	**Dayna** CommuniCard PLUS	$422*	●		MacComCenter	MacComCenter	lifetime
♦♦♦	**Ositech** Mac Jack of Diamonds	$359	●		MacComCenter	MacComCenter	5 years
♦♦♦	**Zoom** PC Card V.34C Plus	$149	●	●	FAXstf	MicroPhone LT	2 years

✓ MacUser BEST BUY

*Estimated street price

Listing is alphabetical within groups of equal mouse ratings.

Smart Shopper When shopping for a PC Card modem, check for

- proper cabling for Macintosh
- value-added software bundle
- CCLs (connection control languages) for Apple Remote Access
- fax and terminal software
- other hardware features, such as those for Ethernet and/or cellular-phone support

From left to right: The Global Village PowerPort Platinum Pro, U.S. Robotics Megahertz 33.6, and Dayna CommuniCard PLUS fit into the PC Card slot of modern PowerBooks.

Directory

Dayna Communications
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800-443-2962
801-269-7200
801-269-7363 (fax)
www.dayna.com

Global Village Communication
Sunnyvale, CA
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408-523-1000
408-523-2407 (fax)
www.globalvillage.com

Ositech
Guelph, ON
Canada
888-674-8324
519-836-8063
519-836-6156 (fax)
www.ositech.com

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Skokie, IL
800-342-5877
847-676-7010
847-676-7320 (fax)
www.usr.com

Zoom Telephonics
Boston, MA
800-666-6191
617-423-1072
617-423-9231 (fax)
www.zoomtel.com

mind that data transfer via cellular phone is certainly challenging and is not a good full-time substitute for using an analog line. However, advances in cellular technology and in modem protocols, such as MNP 10, have made cellular connections more viable, although you can expect slower transfer rates than what you get with an analog line.

Shuffling Files

In addition to recording successful-connection rates, we timed file transfers with each modem. The average file-transfer rates for all the modems were close, the fastest being those from Dayna, Global Village, and Zoom. The U.S. Robotics and Ositech modems were the slowest.

Modem Miscellany

Each modem comes with the adapter necessary for connecting to a phone line. Four have a traditional adapter, which contains one connector that plugs into the modem and another that plugs into a phone jack. The problem with this type of setup is that it's easy to lose the adapter, and without it, your modem is useless.

The U.S. Robotics modem has a patented connector called the XJACK, a retractable phone jack that's an integral part of the PC Card. A simple push of the finger releases the XJACK, which is a short, square extension of the card with a hole in the shape of a phone jack. Two metal contact points link to the phone jack as it snaps into place. The XJACK may seem a bit fragile, but it isn't — more important, it will never get separated from you or your PC Card modem.

All the modems do double duty as 10BASE-T Ethernet cards, and you can use the modem and 10BASE-T Ethernet features at the same time. All come with the appropriate adapters for 10BASE-T Ethernet, which are different from modem adapters. 10BASE-T Ethernet also requires different cabling from that for phone use.

If you have a PowerBook that doesn't support PC Cards, you can use a portable external modem, such as the Newer Technology Link Com, which is about the size of a cigarette pack. We found that this modem wasn't as fast or as reliable as the PC Card modems we tested, however. It also lacks cellular- and LAN-connection features and does not come with fax or communication software. Since it's powered by the ADB bus, it doesn't require a power transformer, or "brick," but you still need to carry along two cables — a serial cable and an ADB cable.

The Bottom Line

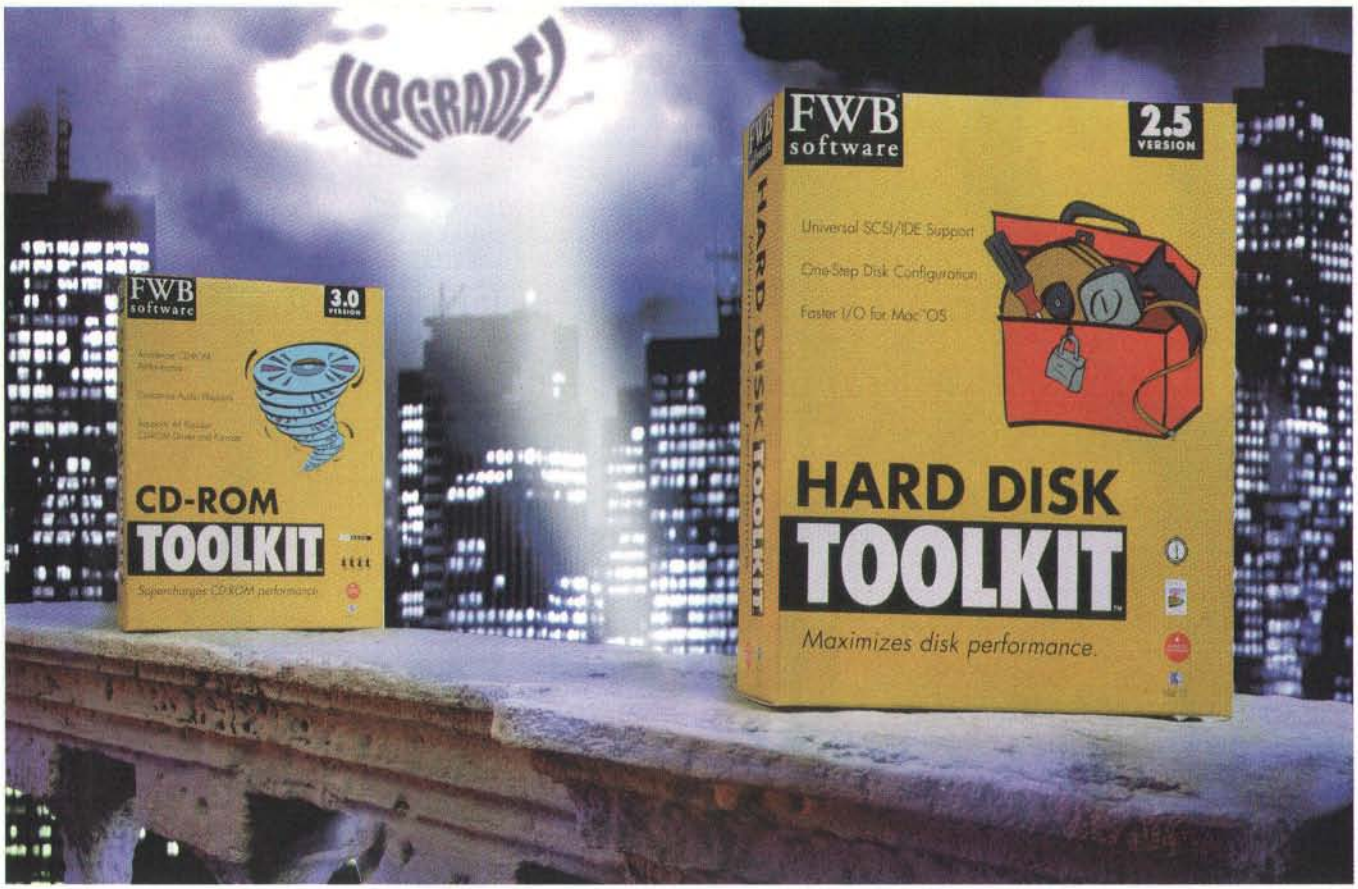
The Global Village PowerPort Platinum Pro offers nice features, has a good price, and performed well in our tests. We additionally recommend the U.S. Robotics Megahertz 33.6 modem, with its XJACK. · *David Bardes*

David Bardes, a product specialist at ZD Labs, also managed the testing for this report.

kilobits per second. The data shown here is an overall average; a data transfer over a clean line will be much faster, and a transfer over a noisy line will be slower.

Successful Connections Percent	*Average Speed* Kilobits/second
98	6.827
97	6.553
98	6.687
97	6.553
70	6.687

Best performer(s) in each test



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CIRCLE 71 ON READER SERVICE CARD

FAST and Faster

Two new generations of the PowerPC chip blast the Mac OS into new speed realms

OVER THE NEXT FEW MONTHS, expect two new, superfast microprocessors to start appearing in new systems from Apple and other Mac OS-hardware vendors. One is a sharply accelerated version of the current PowerPC 604e, known by the code name Mach 5; the other is a brand-new member of the PowerPC family, so far known only as Arthur. We've tested some prototypes, and what we found was a mind-blowing 50- to 100-percent boost in Mac OS-system speed — the biggest speed increase since Apple moved to RISC (see the "Racing the New Engines" sidebar). And that's just for starters — the new CPUs lay the groundwork for rapid additional speed advances in coming months.

As usual, these new processors will debut in pricey professional systems, but it won't be long before they make their way into midrange and entry-level models too — they're not only faster but also far less expensive and easier to manufacture than previous high-performance processors. In addition, they're smaller and cooler and they require surprisingly little power, so some versions will even show up in laptops, probably sooner than you might suspect.

Expect Power Computing to be first out of the gate, with Apple following close behind. Both companies will feature new chips in upgrades of their existing top-of-the-line models, due in late summer or early fall — Power Computing in the PowerTower Pro and Apple in the Power Mac 8600 and 9600. When it comes to processors, however, the two companies are headed down different paths, at least for the time being: Power Computing is passing on Mach 5 initially but will be the first to market with the Arthur. Apple's next round of desktop systems will feature Mach 5 604e chips but no Arthur processors.

The Amazing Shrinking 604e

The Mach 5 will appear first in new versions of Apple's Power Mac 8600 and 9600. In terms of processor architecture, there's not much new here: It's another iteration of the 604e design that's been in use for more than a year. The breakthrough in this case comes on the production side: IBM and Motorola have succeeded in shrinking the width of the 5.1 million transistors on the chip from .35 microns each to an industry-leading .25 microns. The net effect is to reduce the size of the chip's die by a startling 68 percent — from 148 square millimeters to only 47 square millimeters. That's far smaller than even the current 603e, which, at 81 square millimeters, used to be considered tiny.

The significance isn't the liberation of 101 square millimeters but that the Mach 5 chips can operate at higher frequencies than the larger 604e's without melting down and, in this case at least, that higher frequencies mean higher speed. In late June, Motorola announced the first Mach 5 processor, at 250 MHz, but the Power Macs we tested came with versions of the chip running at 250, 300, and 350 MHz. Even faster versions are expected

By Henry Norr

by next year, as IBM and Motorola work the kinks out of the new production process.

In addition to shrinking the die size, the chip makers have also reduced the new 604e's core voltage from 2.5 volts to 1.8 volts. Together, these changes reduce overall power consumption from nearly 15 watts to just 5 watts. That's almost low enough for use in laptops, but don't expect to see this particular chip in your next PowerBook: Unlike the Arthur, the Mach 5 still doesn't have the built-in power-management features battery-operated systems require.

In mainstream desktop systems, the Mach 5 will face stiff competition from its newborn sibling, the Arthur. But the Mach 5 retains some advantages that should secure its place in high-end systems: First, it delivers superior floating-point speed; that's irrelevant for most Mac OS applications but important for 3-D modeling and many scientific applications — and for Display PostScript speed under Apple's upcoming Rhapsody OS. Second, like other members of the 604e family, the Mach 5 provides full support for multiprocessing; the Arthur, at least in its current incarnation, is missing some technical features most MP designs require.

Arthur: Legendary Speed

Whereas Apple chose the Mach 5 for this summer's high-end models, Power Computing is placing its bets on the new kid on the block, the Arthur.

Like the Mach 5, the Arthur is manufactured in a .25-micron process, enabling the designers to squeeze some 6.35 million transistors into only 67 square millimeters of silicon. But the Arthur is not a size-reduced version of any existing PowerPC — it's a whole new design. In fact, it's the first member of what IBM and Motorola call G3, the third generation of PowerPC technology, after the first-generation 601 and the follow-up 603 and 604 families.

The Arthur was built from the ground up to run the Mac OS as fast as possible. Using a new performance simulator developed specifically for the purpose, engineers at the Somerset Design Center, in Austin, Texas, were able to test a variety of design options to determine exactly which combination of features would maximize Mac OS speed.

(That doesn't mean the chip won't also work well with Apple's new Rhapsody OS: At least according to Motorola and IBM, applications developed for the new software environment

Racing the New Engines *Speed-testing next-generation processors*

To see how the Mach 5 and the Arthur chips compare to the processors in today's Mac OS systems, we tested prototypes of four Mach 5 computers from Apple: Power Mac 9600s with 300- and 350-MHz Mach 5 chips and Power Mac 8600s with 250- and 300-MHz versions of the Mach 5. We also tested a Power Computing PowerTower Pro system (tentatively named the PowerTower Pro G3/275) with a 275-MHz Arthur. (Power Computing also plans a PowerTower Pro with a 250-MHz Arthur, which was not available in time for our testing.)

Putting the Mach 5 to the Test

All these systems, even though they are built around aging Apple logic boards with relatively slow main-memory systems and a top system-bus speed of 50 MHz, represent a significant leap forward in Mac OS-system speed. Even the slowest of the lot, the Power Mac 8600/250, scored almost 60 percent higher on the MacBench 4.0 Processor test than the fastest previous Apple system, the Power Mac 9600/233; Apple's fastest new entry, the Power Mac 9600/350, scored fully 85 percent higher than its 233-MHz predecessor on the Processor test.

But, most exciting of all, the Arthur-based PowerTower Pro left even these highly advanced Apple systems in the dust. The system's score on the MacBench 4.0 Processor test speaks for itself: 1,029 — more than 30 percent ahead of the score of the fastest Apple Mach 5 systems and nearly double the Processor scores of other recent high-end models.

Some of the improvement is due to System 7.6 (the 9600/233 we tested was running System 7.5.5). Some of it is due to the increased processor clock speeds the Mach 5's tiny die makes possible. But the biggest factor in the new Power Mac systems' speed is new cache designs. Apple uses an *inline-cache* design, code-named Sam-I-Am. It includes a 1-MB L2 cache, compared to the 256K and 512K L2 caches that shipped, respectively, with previous 8600 and 9600 configurations.

More significantly, Sam-I-Am moves the L2 from the main logic board to the CPU card, directly alongside the new Mach 5 processor, and becomes an inline cache: Although the main system bus still runs at a relatively poky 50 MHz, the CPU can now get data from the L2 at 100 MHz.

Much of the speed of the PowerTower Pro G3/275 is due to the coupling of the Arthur with a 1:1 *backside cache*. An inline cache communicates with the CPU at high speeds via the same conduit used for slower communications with other computer subsystems. A backside cache, by contrast, has its own dedicated communications channel with the CPU. A backside cache can communicate with the CPU at even faster speeds than an inline cache — up to 100 percent of the processor clock speed, as is the case with the PowerTower Pro G3/275.

Speed tests of processor-intensive operations in Adobe Photoshop 4.0 and Claris FileMaker Pro 3.0v4 confirm our MacBench findings: These new systems really do leave previous Macs and clones in the dust.

MacUser LABS ! BETA

	MacBench 4.0 *Processor Score*	*Disk Score*	*Publishing Disk Score*	*Graphics Score*	*Lo-Res Publishing Graphics Score*
Power Computing PowerTower Pro G3/275	1,029	484	312	810	738
Apple Power Macintosh 9600/350	788	191	251	659	615
Apple Power Macintosh 8600/300	749	144	248	569	496
Apple Power Macintosh 9600/300	739	190	251	621	584
Apple Power Macintosh 8600/250	677	143	*	519	463
Reference System					
Apple Power Macintosh 9600/233	428	190	247	553	521

*Test not run.

MacBench 4.0 scores are relative to those of an Apple Power Macintosh 6100/60 with a 30-MHz memory bus, a 250-MB hard drive, 2 MB of built-in graphics RAM, and no L2 cache. This baseline system is assigned a score of 100 for all MacBench tests. All systems are tested as configured by vendors but with AppleTalk turned off and virtual memory turned on. We set screen resolution to 640 x 480 pixels with a bit depth of 8 bits (256 colors).

are likely to be fundamentally similar to those that now run on the Mac, and that similarity is more important for speed purposes, they say, than low-level differences in the operating systems themselves.)

The Arthur's core is based on the current PowerPC 603e core but includes several features from the 604e, a few from the 620 (a high-end, 64-bit PowerPC variant that doesn't run the Mac OS), and some brand-new ideas.

The Arthur's biggest innovation is a new interface for L2-cache memory. Older PowerPCs don't have a separate L2 interface; the designers expected the cache to reside on the main system bus, the data channel that also connects the CPU to RAM, ROM, and other parts of the system. The problem with this design is that the system bus on current Mac motherboards runs at only 40 to 60 MHz; since the latest PowerPC processors crunch through data far faster than that, they're sometimes forced to sit idle until they receive more data and instructions over the comparatively slow system bus.

The obvious solution, you might think, is to speed up the main system bus. There's definitely room for improvement along those lines: Later this year, new Mac OS systems based on the Common Hardware Reference Platform (CHRP) will have system buses running at 66 MHz, probably increasing to 83 MHz next year. But those are relatively modest improvements compared to the torrid pace of microprocessor progress. Any larger increases in bus frequency would significantly raise costs and create difficult electrical-interference problems.

In light of these obstacles, system and processor architects have been focusing much of their attention in recent years on a more limited goal: faster retrieval of data and instructions from L2 caches. One technique, using an *inline cache*, employs the standard bus interface of older PowerPC chips but enables the CPU and L2 cache to communicate through it at speeds faster than the normal main-bus frequency.

UMAX pioneered this approach, with its CacheDoubler technology, introduced in June in a new line called the SuperMac C600x, in which the system bus runs at only 40 MHz but the CPU and L2 cache exchange data at 80 MHz. A similar strategy helps explain the high speed of Apple's new Mach 5-based Power Mac 8600 and 9600 models: Those systems have a main bus that is still limited to 50 MHz, yet the processor and the 1-MB L2 cache, located on the processor card, talk at 100 MHz.

In a few cases, such as the mode change from CMYK to RGB color, the 9600/350 outperformed the PowerTower Pro. This underscores that the Arthur's Achilles' heel is floating-point speed. For floating-point-intensive work, such as scientific modeling and 3-D rendering, the PowerPC 604e architecture, on which the Mach 5 is based, remains superior to the 603e framework, on which the Arthur is built. Still, when we added up the average times on five processor-intensive operations in Adobe Photoshop — the mode change, the rotation, the Gaussian blur, the despeckle, and the Unsharp Mask — the pattern was clear: The total for the Arthur system was 64 seconds, nearly 15 percent faster than the 74 seconds of Apple's top-of-the-line Mach 5 system, the Power Mac 9600/350, and 21 percent faster than the 81 seconds of the (admittedly speedy) 8600/250. And Power Computing officials say they expect to make their system even faster before it ships.

We did find a distressing problem with the new Power Macs: Disk performance on the prerelease units we tested was positively pathetic. On MacBench's Disk and Publishing Disk tests, the Apple systems, especially the 8600, produced scores far short of what we've seen with other recent high-end models, including Apple's own systems. These disappointing results are doubtless due partly to Apple's insistence on using a paltry disk-cache setting of 96K, but even after boosting cache levels to 1 MB for a few tests (results not shown), we found the disk speed alarmingly slow. We hope Apple remedies this before final release of the new Mach 5 systems.

It's also worth noting that while Apple seems to be taking a step backward in disk speed, Power Computing continues to move ahead: An Adaptec Wide Ultra SCSI card will come standard with the Arthur system, and buyers will get their choice of a 2-GB, 7,200-rpm Fast-and-Wide SCSI drive and a 4-GB, 5,400-rpm Fast-but-not-Wide SCSI drive. We tested the PowerTower Pro G3/275 with the 4-GB drive, and its MacBench Disk score was more than double that of the Power Mac 9600/350; on the Publishing Disk test, the gap was a narrower but still substantial 24 percent.

Summing It Up

Power Computing hadn't resolved all configuration questions — particularly about display cards — at press time, but the company says that it plans to price a PowerTower Pro in a standard configuration with a 275-MHz Arthur processor, 64 MB of RAM, a 4-GB hard drive, and a 24x CD-ROM drive at $4,495; a similar configuration with a 250-MHz version of the processor will be $3,995.

Apple plans to ship the 9600/300 and 350 with 64 MB of RAM, a 4-GB hard drive, a 24x CD-ROM drive, and a built-in Iomega Zip drive; the 8600/250 and 300 will ship with 32 MB of RAM. The company hadn't yet set prices for its Mach 5 systems, but given the clear speed advantage of its licensee's Arthur entry, Apple will have to make them unusually aggressive — or else face the prospect of further erosion of its share of the high-end Mac market.

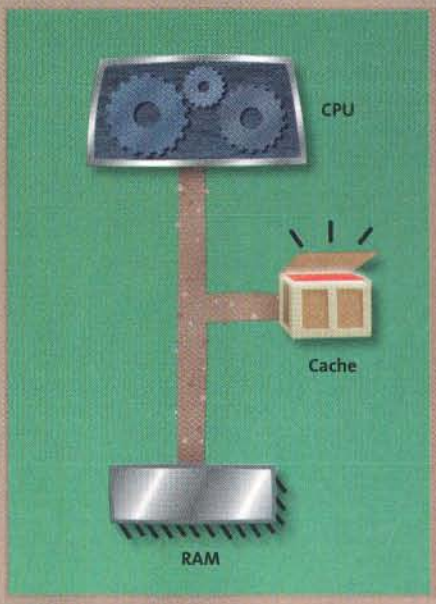
MacUser LABS ! BETA

	10-MB Adobe Photoshop File					3,000-Record FileMaker Pro Database	
	CMYK—> RGB Seconds	*Rotate 13°* Seconds	*Gaussian Blur (2 pixels)* Seconds	*Despeckle* Seconds	*Unsharp Mask* Seconds	*Four-Way Sort Ascend/Descend* Seconds	*Four-Way Sort, All Ascending* Seconds
Power Computing PowerTower Pro G3/275	6.7	17.4	12.7	13.7	13.9	*	*
Apple Power Macintosh 9600/350	6.1	22.7	14.6	15.1	15.7	17.4	22.4
Apple Power Macintosh 8600/300	8.0	22.8	14.8	16.2	16.4	20.0	25.5
Apple Power Macintosh 9600/300	6.6	22.6	13.7	15.4	15.1	20.0	25.8
Apple Power Macintosh 8600/250	8.1	24.5	15.0	16.9	16.5	23.7	31.1

*Test not run.

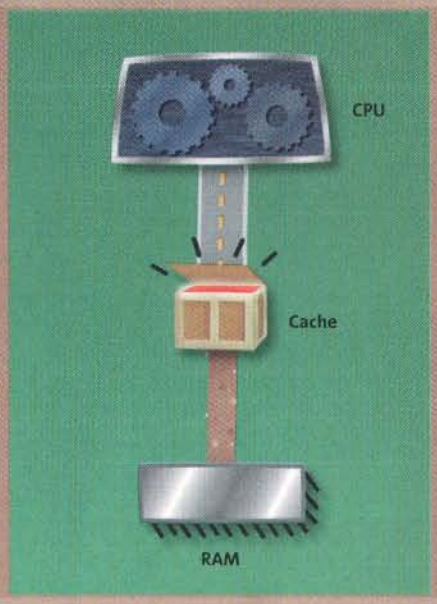
Cache as Cache Can

One of the most powerful ways to increase a computer's performance is to add a *cache* — a chunk of fast memory from which frequently used data and instructions can be retrieved at high speed. Every modern CPU has an *L1* (level one) cache on the chip itself, but the size, speed, and location of the off-chip *L2* cache separates the fastest Mac OS systems from the also-rans.



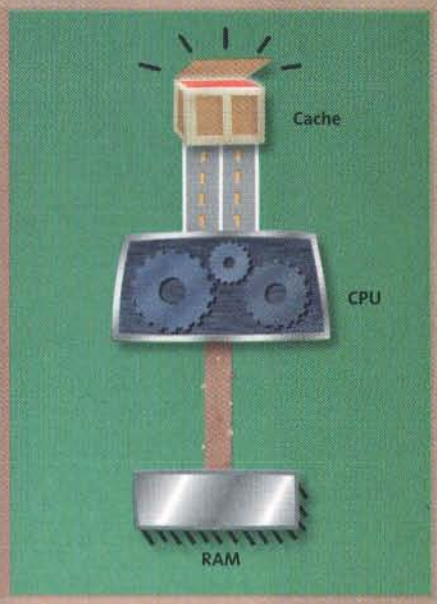
Lookaside Cache: *Old Faithful*

First introduced to the Macintosh in the venerable IIci, a *lookaside* cache sits to one side of the system bus and swaps data with the microprocessor at the same speed as the bus — a 40-MHz system bus can therefore support only a 40-MHz lookaside cache.



Inline Cache: *Double Time*

UMAX's CacheDoubler systems are the first to have an *inline* L2 cache, which sits on the system bus, between the CPU and main memory, and communicates with the PowerPC processor at twice the speed of the bus. For example, a 40-MHz system bus would enable an 80-MHz inline cache.



Backside Cache: *Full Speed — Possibly*

New Arthur PowerPC chips can support a *backside* cache that's independent of the system bus and that can run at half or even full CPU speed. Thus, a 300-MHz Arthur could use a 150- or 300-MHz cache — but cache chips that fast aren't cheap and must be closely coupled with the CPU.

But the Arthur chip — like the PowerPC 620 and the new Pentium II, from Intel — embodies a more radical advance known as a *backside cache:* These new chips provide a separate interface, or data pipeline, designed specifically to communicate with an L2 cache at high speeds.

In current Pentium II systems, that speed is half the processor clock speed, and most experts expected that initial Arthur-based systems would likewise use a 2:1 CPU-to-backside-cache timing ratio. But the new PowerPC microprocessor can actually support a variety of ratios, from 3:1 to 1:1, and Power Computing engineers managed to design a 1:1 bus for the company's initial Arthur-based PowerTower Pro models. In other words, these systems enable the Arthur to retrieve data from its 1-MB L2 cache at the same frequency as that of the CPU's own clock, a blazing 250 or 275 MHz.

With the Arthur just at the beginning of its life cycle, look for a quick increase in its clock speed over the next year or two. But don't assume that backside-cache speeds will be able to keep up: Even the hot-rodding engineers at Power Computing say they expect they'll have to drop back to a slower backside-cache speed once the Arthur hits 300 MHz and higher — until, that is, IBM and Motorola deliver a follow-up design that puts an Arthur and L2 cache memory inside the same ceramic packaging, to minimize "noise" on the L2-cache bus.

As the new PowerTower Pro models demonstrate, the Arthur is powerful enough to drive even high-end single-processor systems. Its relatively small size, however, will keep manufacturing costs low, so IBM and Motorola are likely to price it low enough for midrange and even entry-level systems. And for all its prowess, it draws no more power than the 603e — 5 watts — and it inherits the 603e's built-in power-management capabilities, so look for it in Mac OS laptops next year — or sooner.

Henry Norr is editor emeritus of MacWEEK.

Illustration · Mike Lee

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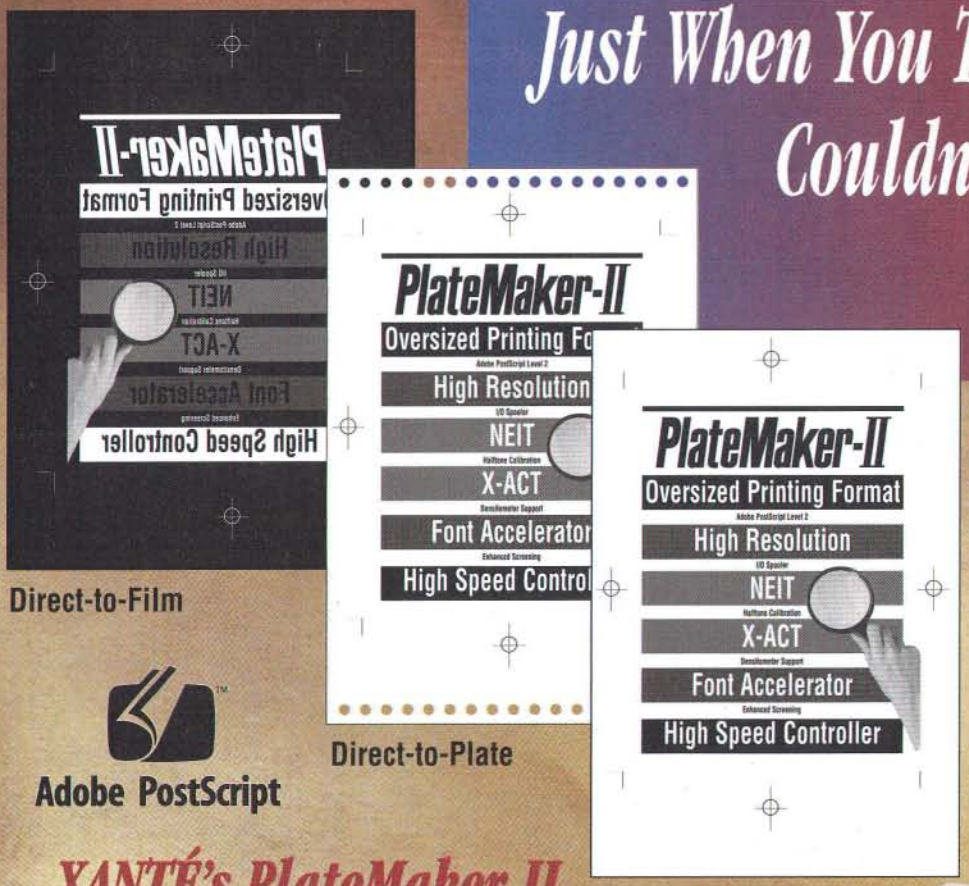
for one-click access to sites about the next-generation hardware that will run the Mac OS, such as:

PowerPC Advocacy Newsgroup
Developers, engineers, and just plain chip geeks exchange opinions, rumors, and tips about PowerPC advances in this lively forum.
news:comp.sys.powerpc.advocacy

IBM PowerPC Home Page
You'll find a broad range of information about PowerPCs here, from easy-to-read product data sheets to programmers technical notes; includes a road map outlining plans for the PowerPC through the year 2000.
http://www.chips.ibm.com/products/ppc/

Motorola PowerPC Home Page
There's some redundancy between this site and its IBM counterpart, but you can glean good supplemental info here and find a great set of links to vendors that support the PowerPC.
http://www.mot.com/SPS/PowerPC/

Just When You Thought It Couldn't Get Any Better...



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MacUser QuickStart

QuarkXPress 4.0

Our sneak preview checks out the changes in the long-awaited QuarkXPress 4.0 — do they go far enough to justify the seven-year wait?

If seven years is long enough to make married couples itchy, think what it does to faithful users of a page-layout application who wait that long for a major update. Yes, it's been just about that long for QuarkXPress users. The fact that QuarkXPress has continued to dominate the print publishing market despite the long delay says a lot about the program's sound design and reliability. But you'd better believe that expectations are mighty high for version 4.0. And if those expectations aren't met, the faithful may be faithful no longer. So the big question for us, in looking at a late-beta version of the program, was this: Is it worth the wait?

We knew we'd find a lot that's new and different in 4.0, which boasts "more than 75 significant new features." Some of the new features, such as those for creating long documents, simply play catch-up with Adobe PageMaker. But also included are features that promise a significant competitive advantage, such as Bézier tools, editable clipping paths, and the ability to convert type to outlines. We were anxious to see whether these new features — along with the anticipated improvements to existing features — would streamline workflow as much as we'd hoped.

Incremental Interface Improvements

If you're wondering whether drastic interface changes accompany all the new features, the answer is no. The fundamental structure of 4.0, including the menu organization, is basically the same as that of 3.3. However, there are some notable interface changes — mostly for the better — in 4.0.

The first change you're likely to notice is the addition of new tools to the Tool palette, which is now organized with some pop-out tools beneath the visible tools, to prevent clutter. The additions include Bézier tools and text-path tools (more on their capabilities later) as well as tools for drawing nonrectangular text boxes (instead of using the Change Shape command after the boxes have been drawn, as in previous versions). You can easily move tools to and from the primary palette if you want to customize it.

By Diane Burns

! BETA QuarkXPress 4.0 at a Glance

Who Needs It: Anyone involved in print-based design or production who uses, or is thinking of using, QuarkXPress 3.3.

Why: Existing features of publishing's workhorse have been improved and the right set of new ones added.

Best New Feature: Powerful graphics capabilities let QuarkXPress users perform common tasks without turning to illustration or image-editing programs.

Weakest New Feature: Indexing function requires tedious one-at-a-time selection of entries.

Company: Quark, Denver, CO; 800-788-7835 or 303-894-8888; www.quark.com.

Price: $995; pricing for upgrades and for QuarkXPress Passport 4.0 not available at press time.

Minor interface changes add niceties in QuarkXPress 4.0 without disorienting longtime users, and major new graphics and book-creation features promise big workflow improvements.

1. Basic menu organization remains unchanged, which will greatly ease the transition for current QuarkXPress users.

2. The Tool palette now sports pop-out menus for old, familiar tools as well as for a dozen new ones. Adding or removing tools from the primary palette is easy.

3. You can now draw Bézier shapes for boxes, lines, or text paths (shown here). The tools for drawing these shapes will feel familiar and comfortable to anyone who has basic skills in Illustrator or FreeHand.

4. Text paths, a new QuarkXPress item, let you type text on straight or Bézier line paths.

5. When you create a book file, the file displays as a palette that lets you add chapter documents and synchronize their elements (style sheets, H&Js, and so on) based on a designated master chapter. You can also use this palette to control pagination and print all or part of the book.

6. The Lists palette lets you collect text to which a style sheet has already been applied, such as headings for a table of contents. Once the list appears correctly in the palette, you can select an active text box and *build* the list to transfer its contents into the box.

7. Tabbed dialog boxes streamline tasks by grouping logically related commands in one dialog box.

8. You can now create clipping paths directly in QuarkXPress, instead of turning to Photoshop.

9. Clipping paths and runaround paths are completely editable, similar to other Bézier items.

10. The new Dashes & Stripes feature lets you create custom dashes and orienting stripes; you can apply color to dashes, the gaps between them, or both.

11. The Measurements palette provides precise measurements as well as interactive controls that significantly enhance the manipulation of Bézier points and associated handles.

12. Go to Page icons (available to 3.3 users via the free Bobzilla XTension) and a Go to Page field are some of the features formerly available in XTensions that have been incorporated into the program.

Old familiar tools have become more flexible: You can now import pictures with either the Content tool *or* the Item tool selected, instead of having to select the Content tool each time. You can also use the Content tool to marquee and select multiple items, instead of having to select the Item tool first. And the distinction between text boxes and picture boxes is diminished with a new command that lets you change the content of a box to text, a picture, or none. Now if you draw a box after grabbing the wrong tool, you needn't redraw it; just change its type.

Another change is the new, tabbed dialog boxes, which make accessing related features easier. The Print dialog box benefits especially from the tabbed approach, combining the Page Setup and Print commands, for more-streamlined setting of print options. Unfortunately, the dialog box for each tab must be as large as the box needed for the most extensive tab option in the group, resulting in unnecessary obscuring of your document for some options. But the tabbed groupings overall make a lot of sense, and you'll quickly forget the program's dialog boxes were ever any other way.

Powerful Graphics Features

Although the subtle interface changes may be the first thing you notice about 4.0, the most exciting additions are a slew of new, well-designed graphics features. In particular, the addition of Bézier tools and the ability to create and edit clipping paths will significantly change the workflow for QuarkXPress users. You'll no longer need to use illustration programs such as Adobe Illustrator or Macromedia FreeHand to draw a squiggly line, convert type to outlines, and place text on a path — and you won't have to open Adobe Photoshop in order to create or edit a clipping path. These tools aren't able to offer all the niceties of full-blown drawing packages — layer control in particular would be nice to have — but they fulfill an important purpose: letting you stay in QuarkXPress to perform routine graphics tasks that used to require other programs (and that still do, for the most part, in PageMaker).

Bézier Tools Bézier pen and freehand tools for drawing boxes, lines, and text paths are not only new but are also well implemented. Illustrator and FreeHand users will quickly become comfortable with them. You can add or subtract points and change from one type of point to another either while drawing the point or after you've drawn a path. And the Measurements palette is very helpful when you want to manipulate those points — it displays the precise location of the selected anchor point as well as the length and location of the associated handles, and it allows you to change numerical values to adjust the item as an alternative to manipulating points by hand. The use of separate drawing tools for Bézier boxes and lines (a different approach from that of most illustration programs) takes a little getting used to, but it's consistent with QuarkXPress' historical approach of using separate tools for drawing boxes and creating lines.

Clipping Paths Another task that frequently prompts QuarkXPress 3.3 users to take up another program — namely, Photoshop — is the need to create a clipping path (which shows what part of an image to "clip," or make transparent). Version 4.0 allows you to create a clipping path that you can edit fully by manipulating Bézier points on the path — for example, by adding or subtracting points. And if you *are* working with a TIFF or EPS image created in another program, you'll appreciate the ability to assign either an already embedded clipping path or a saved alpha channel as the basis for QuarkXPress' editable clipping path. Another nice aspect of Quark's implementation of this feature is that QuarkXPress' clipping paths are not part of the image but rather are part of the QuarkXPress file — so the image itself isn't altered.

Type Outlines Another feature that enables you to stay in QuarkXPress is the ability to convert type to editable paths in the form of picture boxes. To use this feature, you select text — only one line at a time is allowed — and choose the Text to Box command; the text is copied and converted to PostScript *paths*, or outlines, in the form of a series of picture boxes. You can then import pictures, apply a frame, and manipulate the text shapes as you would any other picture box. You'll still need to use Illustrator or FreeHand in order to convert large chunks of text to outlines, but this new QuarkXPress feature saves many trips to those programs.

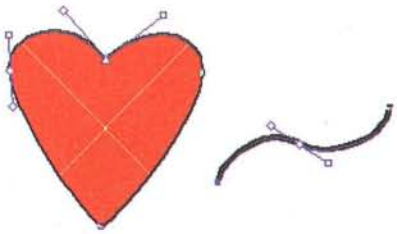
Merge and Split The Merge and Split commands, with features similar to Illustrator's Pathfinder filters, extend even further the possible graphic effects you can create directly in QuarkXPress. The Merge commands — which include Intersection, Union, Difference, and Combine — let you create complex shapes by combining smaller outlines according to the various criteria of each command. The Split command lets you separate combined items.

Type on a Path If you've ever had a project with just one small line of text on a curved path, you've had to rely on an illustration program to create the text and then had to import it into QuarkXPress as an uneditable graphic. Version 4.0's text-path tools let you draw lines, straight or curved, along which you can input text. The implementation is perfectly adequate, but we'd like the ability to create closed text paths, such as circles, without resorting to workarounds. Quark's implementation goes Illustrator one better, though, in offering various choices for the

Graphics Onboard

Five effects you can now achieve without leaving QuarkXPress

Will QuarkXPress 4.0 take the place of Adobe Illustrator or Macromedia FreeHand for all the graphics requirements in your layouts? Probably not, but its new graphics tools do make it easy to perform many commonly used effects that used to require turning to other programs.



The Bézier tools in QuarkXPress 4.0 let you draw and edit boxes and lines of any shape, either with manual, pen-type tools (as in the shape at left) or with freehand tools (as in the shape at right).

The text-path features not only let you type text on an editable path but also offer options for changing the orientation of text baselines to the path (right).

orientation of the text baselines to the line (see the "Graphics Onboard" sidebar).

Text Runaround The ability to run text in a single column around all sides of a graphic is a feature that's been available in PageMaker for years and years and that's long overdue in QuarkXPress. Unlike PageMaker, QuarkXPress 4.0 implements this feature as a characteristic of text, or rather a text box, as opposed to being a characteristic of a picture. This approach lets you drop multiple pictures into a text box without having to modify each picture box.

Custom Dashes and Stripes The Dashes & Stripes feature lets you create custom dashes and stripes and apply them to lines or box frames — and it goes beyond Illustrator's and FreeHand's capabilities by letting you create dashes and the associated gap numerically or graphically, using slider bars. You can also create stripes, which essentially orient lines — and the gaps between them — vertically.

Long-Document Features

PageMaker has had book-related features for years, whereas QuarkXPress users have had to rely on manual systems or third-party XTension products. With version 4.0, QuarkXPress users finally have features that let them compile a series of documents into a book, create lists (such as a table of contents or a list of figures), and create indexes. We were truly disappointed in the indexing feature and hope it is better implemented by the time QuarkXPress 4.0 ships. Still, we think users will find all these new features more convenient than the ad hoc templating and sectioning systems they've had to set up to create books with previous versions.

Bookmaking The basic building block for long documents in version 4.0 is the *book*, a new type of QuarkXPress file that displays as a palette, similar to the way a Library works. The book palette contains links to individual documents, called chapters. Once you've added a chapter to a book, you can synchronize custom-made lists — such as H&Js (hyphenation and justification settings), style sheets, and colors — among all the chapters by designating one as the *master* chapter. You can automatically update page numbers across chapters and, of course, print chapters. Book files have simple features for version control and management over a network so that only one user can have a chapter file open at a time.

List Generation Once you have a book, of course, you'll almost certainly need a table of contents, which version 4.0 lets you create by using *lists*. The Lists palette allows you to collect all the text to which a specific style sheet has been applied and then build a list (with or without page numbers) of that text.

Transition Tips *Make your upgrade a smooth one*

DON'T EXPECT AN INSTANT ADJUSTMENT to an upgrade that's as feature-packed as QuarkXPress 4.0; you'll definitely need to spend some time learning how to take advantage of all the new capabilities. Fortunately, though, Quark has organized the new features in a way that's generally consistent with the logic of previous versions. Keyboard shortcuts remain unchanged, for example, so you won't need to retrain your fingers. In fact, new features will probably be less of a transition concern than compatibility with version 3.3 and its XTensions. Here's the compatibility scoop, plus a book-palette tip you can use even if you don't work on books.

Backward-Compatibility Basics For the first time, Quark has built in backward compatibility — that is, version 4.0 documents can be saved in version 3.3 format. However, 4.0-specific elements are converted to the lowest common denominator between versions. For example, Bézier boxes created in a 4.0 document are converted to polygon boxes in a 3.3 document, and text paths are converted to text in a box. Still, if you stick with features available in 3.3 when working in 4.0, the document will behave perfectly when you open it in 3.3.

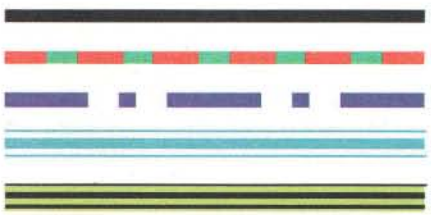
Extending Your XTensions What to do with all those XTensions you've invested in? Well, the first thing is to find out whether you'll still need them, by investigating the new features in 4.0. Almost every new feature was formerly provided in some form by a third-party XTension. New features that used to require XTensions include the PPD manager and the XTensions manager. Quark has also adopted some features from its soon-to-be-discontinued QuarkPrint, but not — alas — the Document Statistics feature.

If you have a favorite 3.3 XTension, you'll be happy to hear that 4.0 has an emulation layer that allows 3.3 XTensions to run fine, as long as they adhere to Quark developer guidelines. (Windows XTensions, by contrast, must be rewritten.)

Book-Palette Bonuses Even if you think QuarkXPress 4.0's long-document features aren't for you, get familiar with 4.0's book palette for the printing and file-synchronization features it offers. Because the book palette lets you print several files with a single Print command, you can use it to queue *any* group of files for printing — whether they're related or not — without having to tend each one individually. You can also use the book palette to synchronize H&Js, style sheets, colors, lists, and Dashes & Stripes among groups of files.

Merge commands let you combine items to create new shapes and compound picture boxes. The Difference command (center) and the Exclusive Or command (right) have been applied to the original graphics on the left.

The Text to Box command lets you convert type to outlines — picture boxes, actually — into which you can import pictures and manipulate them just as you can in any QuarkXPress picture box.



Custom dashes and stripes are easy to create in QuarkXPress 4.0, and the Dashes & Stripes feature offers more flexibility than you get with Illustrator or FreeHand.

Go to **www.macuser.com/bookmarks**
for one-click access to sites related to QuarkXPress, such as:

XPresso Bar
This site provides links to all kinds of information on QuarkXPress, including tips, XTension information, discussion forums, and related publications.
www.xpressobar.com

XTension.com
In addition to offering XTensions for sale and immediate downloading, this site provides tips, an events calendar, and lots of other QuarkXPress-related content.
www.xtension.com

Quark Talk
This vast (and somewhat difficult-to-navigate) site by and for QuarkXPress users includes a message board, a FAQ, and lots of tips and links.
desktoppublishing.com/quark/quarktalk.html

This implementation gives you the flexibility to create multiple lists — for example, a table of contents and a list of figures and tables — from one document or book, which you can't do in PageMaker.

Indexing Indexing is the one long-document feature we'd most like to see improved before 4.0 hits the streets. The approach Quark has used is palette-based, much like that for building lists: You select a word or phrase in your document and then click on the Add button in the Index palette. The Find Next button lets you locate the next occurrence of the word in order to add it, and so on. The potentially huge drawback here is that entries are strictly manual: There's no way to enter all the occurrences of a particular word automatically, and you must click on the Add button each time. Another, more minor drawback is that when an index entry is a subheading to a more general heading (the application allows up to four levels of headings), you're required to manually select the general heading in the palette before adding the entry, rather than just typing it. If Quark doesn't make indexing easier and more flexible in the final version of the application, we hope a third-party-XTension maker will step in to fill the gap.

Style Sheets

Alas, although version 4.0 seems sure to help improve productivity and simplify workflow in many ways, an important area where things seem slightly off is with style sheets. The feature of character-based style sheets, which should be a welcome addition, has been designed in a way that makes the use of paragraph style sheets more cumbersome than in previous versions.

You can avoid having to create a character style sheet as part of a paragraph style by choosing Default as the character style and then defining or editing that default style as necessary — but this approach still ends up burying character attributes too far down. We think most users will simply want to define the font and other character attributes directly in the paragraph style, rather than associating the paragraph style with a character style. We would prefer to see character-based styles kept separate and self-contained, as they are in XTensions such as Extensis QX-Tools.

Users who have style-sheet-intensive documents may find themselves scratching their heads when they first encounter the new style-sheet features. We can only hope that these features will be further refined in subsequent releases to avoid unnecessary confusion.

Other New Features

The complete list of new features and improvements in QuarkXPress 4.0 is too long for us to discuss each one, but we'd like to mention a few we think are particularly significant. New color-related features include support for multi-ink colors, Pantone's Hexachrome color system (six-color high-fidelity printing), and two color-management systems (Kodak's Digital Science and Apple ColorSync 2.1). Notable improvements include easier appending of elements such as H&Js and style sheets from another file (you can now append just selected elements or all elements simultaneously) and fewer limitations on the number of elements in a file (you can now have thousands of paragraphs, style sheets, H&Js, and colors). Finally, 4.0 offers better cross-platform capabilities (it's being released simultaneously for the Mac, Windows, and Windows NT) and multilanguage convenience (all 11 European languages are rolled into one program, QuarkXPress Passport, so you no longer need to purchase individual versions for each language).

The Early Verdict

Is QuarkXPress 4.0 worth the wait? Depending on the final upgrade pricing, enhancements in existing features alone may make upgrading worthwhile. However, the real advantage is in the time-saving new graphics features — these and the book-handling capabilities will make the product a must-have for many. With the exception of the style-sheet and indexing functions, the new features are generally well implemented; veteran QuarkXPress users, although perhaps overwhelmed at first, should find the transition relatively easy and the new capabilities most welcome.

Key to 4.0's ultimate success, however, is how service bureaus will feel about the product. And how service bureaus feel depends on one basic criterion: Will the files print? We had no problems, but we were unable to test printing capabilities extensively with the version available at the time this article went to press. Service-bureau staff who are reading this preview are no doubt wondering what kind of land mines these fabulous new tools can produce in the hands of novices. If you work with service bureaus or printing companies, be sure to ask them about their experiences with 4.0 when it comes out. Fortunately, QuarkXPress has a pretty good track record in this area — and Quark's plans to test 4.0 as thoroughly as necessary with service bureaus were part of the company's explanation for the lack of a predicted ship date at press time.

Although early critics have faulted Quark for not including HTML-conversion capabilities (as PageMaker does) in 4.0, we're inclined to cut the company a little slack, since third-party XTensions such as Astrobyte's BeyondPress have augmented previous versions of QuarkXPress very capably in this area. Also, Quark is planning to offer substantial new Web capabilities and HTML support in version 1.5 of QuarkImmedia ($995 list), the multimedia-authoring XTension for QuarkXPress (about to enter beta stage at press time).

In any case, version 4.0 does an excellent job of providing QuarkXPress' bread-and-butter users — those involved in the creation of the printed page — plenty to look forward to. If it proves at least as stable and reliable as previous versions, it should remain the page-layout leader for a long time to come.

Diane Burns, coauthor of The QuarkXPress 4.0 Handbook *(MIS: Press, 1997), is president of TechArt, a San Francisco-based service bureau specializing in print and online design services in Japanese and other East Asian languages.*

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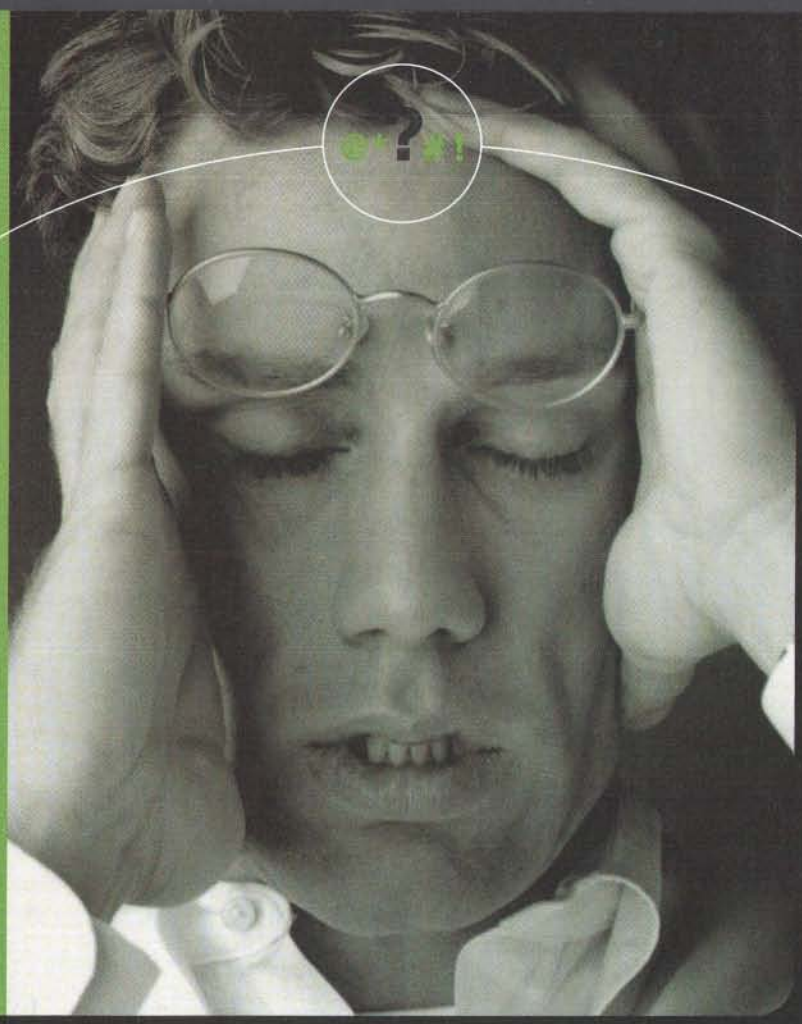

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Whether you're a professional developer, a business communicator, or an educator, there's a multimedia-authoring tool for you

By Tony Bove

No longer just a buzzword, *multimedia* is firmly entrenched in our lives: Entertainment magazines and on-air critics review CD-ROMs and Web sites along with movies and sitcoms, enhanced CDs bring interactive content to the pop-music charts, and creators of interactive games such as Myst are emerging as pop-culture icons. The mix of sound, images, video, and — above all — interactivity with the audience has become a key ingredient of entertainment, business communications, and education. And just as the Mac OS is ideal for creating and manipulating graphics, audio, and video data, it's also first-rate for combining them and injecting interactivity to create compelling multimedia. So whether you're trying to crank out the latest computer-game sensation, promote your company's goods and services, or teach children, there's a selection of Mac applications that will fill the bill.

To help you find the best tool for you, we looked at nine products, which we've divided into three groups: professional authoring tools — comprising Macromedia Director 6; Apple Media Tool 2.1 (and Apple Media Tool Programming Environment), from Claris; and mTropolis 1.1.2, from mFactory — are for developers who publish games or CD-ROMs, create demonstration kiosks, or publish interactive Web content. The business-communications tools — Claris' HyperCard 2.3.5, Allegiant Technologies' SuperCard 3.0, and Pitango Multimedia Systems' ClickWorks 1.2 — let you quickly combine sound, video, and images or create interactive product demonstrations, even if you're not a professional artist or designer. The educational tools each have a place in the classroom, but they're not quite as similar as the products within the other groups: Macromedia's Authorware 4 is for creating computer-based training lessons that students can use to learn at their own pace, whereas Pierian Spring Software's Digital Chisel 2.1 and Roger Wagner Publishing's HyperStudio 3.1 are authoring tools that teachers and students alike can use to create interactive presentations, lessons, or reports quickly and easily.

All these tools can be used to create impressive multimedia presentations, but some are better suited to certain tasks than others. We've chosen a Best Buy in each of the three categories, but bear in mind that a different program may match your specific needs. Compare the capabilities carefully, choose a program, and get interactive!

Commercial Creation

Industrial-strength multimedia-development tools require several key capabilities: They must generate programs for either the Mac OS or Windows. They must allow you to extend the functionality of the programs you create by letting you graft custom code libraries onto them. And, perhaps most important, they must provide a scripting language that gives you precise control over the behavior of animations, images, movies, and other interactive elements in your programs. All three professional tools we evaluated — Director, Apple Media Tool (AMT), and mTropolis — fulfill these three requirements, but as you might expect, each gets there a slightly different way — just as they differ in their overall approaches to building multimedia applications.

Interface Face-off Director — the most widely used professional multimedia-authoring tool — represents action on-screen

Illustration · Rob Magiera Photography · Chloe Atkins

in a spreadsheetlike window view called the Score. Each member of your project's Cast — such as a text element, graphic, sound, button, or video clip — occupies its own row, or channel, in the Score. The Score's columns, or frames, represent time, moving from left to right from the start of a scene to its finish. The metaphor works but can quickly become hard to manage as the number of Cast members and scenes in a project grows. What's more, the Score's relative rigidity has caused many Director users to shift away from the Score and toward Director's scripting language, Lingo, for movie control. Because Lingo scripts can take over control from the Score, the Score window isn't always a reliable representation of your project.

AMT takes a simpler, storyboard-like approach: Projects are represented in the Map window, with individual scenes presented as boxes. You drop media elements into their respective scenes, use pop-up menus to specify how the elements in a scene interact, and draw lines between scenes to sequence them. It is easy to connect, control, and synchronize the playback of media elements by dragging and dropping icons onto the map. AMT Programming Environment (available bundled with AMT) can turn these easily assembled but slow projects into faster ones.

mTropolis, the newest addition to the professional-authoring-software ranks (with occasional bugs and stability problems to prove it), borrows elements from Director and AMT: Its palette-based interface includes the Layers view, which is reminiscent of Director's Score, but like AMT, mTropolis makes extensive use of pop-up menus and Macintosh Drag and Drop to minimize the need for scripting.

With mTropolis, your graphics, movies, and animations (in addition to interface elements such as buttons and pointers) are *objects* that interact with each other by means of tiny commands called *messages*. The type of messages an object transmits and the way it responds to received messages are dictated by *modifiers*, which you apply by dragging and dropping them onto objects.

Modifiers range from simple attributes such as color or sound volume, to routines that include such logical operators as IF/THEN statements, to behaviors such as walking or flying. Behaviors are built from simple actions but can be combined or nested in parent-child relationships to yield remarkably complex characteristics. mTropolis comes with a starter library of behaviors, and you can easily store and reuse custom ones you create.

Reusing and tweaking existing behaviors can save significant time and "reinvention of the wheel" from one mTropolis project to another. In apparent recognition of this benefit, Director 6 introduced behaviors (actually self-contained Lingo routines) that can be dragged and dropped onto Cast members and easily reused. Director 6 behaviors can't be embedded in one another, as they can in mTropolis, but they nevertheless add welcome flexibility to Director.

Sticking to the Script When it comes to all-important scripting capabilities, Director's Lingo beats its competitors, by combining power and precision in a relatively simple scripting language. Although Lingo looks like Greek to the uninitiated (and like Sanskrit to Greeks), it's relatively easy to learn and so powerful that many Director jockeys build applications almost entirely from Lingo scripts. When combined with Xtras — scriptable plug-ins that extend Director's capabilities — Lingo can do just about anything.

On the other hand, Apple Media Language, the scripting language used in AMT Programming Environment, is practically as hard to learn as programming in C (which can also be used to control AMT). The complexity of the scripting language undermines the central simplicity of AMT's storyboard-like authoring environment, and unfortunately, if you want interactions more complex than those in the simplest games and simulations, fluency in Media Language is a necessity. MiniScript, the mTropolis scripting language, errs a bit on the side of oversimplification: Its relatively small command set and simple syntax make it easy to learn, but it lacks some of the potency of Lingo.

AMT and mTropolis also lag behind Director in important behind-the-scenes functionality: Specifically, neither can match Director's control over application memory usage, careful control of which is essential to achieving good application speed on consumer-level computers.

When it comes to cross-platform development, each of the three professional programs has quirks. Director 6 can use one script and Cast to generate Mac and Windows players, but you must own a separate copy of Director for each platform you want your movies to play on — the Mac version can build only Mac "projectors" for distributing movies, and the Windows version builds only Windows projectors. AMT requires you to leave the authoring environment and open your project script in a separate application, Runtime Maker, but once you're there, you can build Mac and Windows versions of your applications at the same time.

The Web In today's wired world, multimedia pros have to factor the Web into their projects, and the professional authoring tools address online needs with varying degrees of success. The best overall is Director 6, which lets you save projects with Macromedia's Shockwave for playback in any Web browser equipped with the free Shockwave plug-in. New in Director 6 is support for "streaming" playback, which means that movies can

The Bottom Line

Professional Authoring

Macromedia Director 6 ★★★★½
BEST BUY
Pros: Powerful scripting language. Easy extensibility via third-party Xtra plug-ins. New drag-and-drop behaviors encapsulate scripts. Built-in support for publishing streaming projects over the Net. Cons: Score metaphor gets unwieldy and imprecise for complex projects. Price: $999 (list; in Studio bundle that also includes Extreme 3D 2, SoundEdit 16 2.0.6, and xRes 3).

Macromedia
San Francisco, CA
800-326-2128
415-252-2000
www.macromedia.com

mTropolis 1.1 ★★★★
Pros: Drag-and-drop behaviors can be nested, enabling highly complex interactions, with little or no scripting. Good QuickTime VR support. Fast proprietary animation format. Easy integration with custom C++ libraries. Cons: This version is somewhat unstable. Primitive text handling and lack of Internet support await correction in version 2.0. Price: $995 (estimated street).

mFactory
Burlingame, CA
888-622-8669
415-548-0600
www.mfactory.com

Apple Media Tool 2.1 ★★★
Pros: Very easy to learn and use. Excellent QuickTime VR support. Cons: Professional-quality interactivity requires scripting in separate Programming Environment. Scripting language exceptionally hard to learn. Poor control of projects' memory management. Price: $495; bundled with Apple Media Tool Programming Environment, $1,195 (estimated street).

Claris
Santa Clara, CA
800-544-8554
408-727-8227
www.claris.com/products/appleproducts.html

Business-Communications Authoring

SuperCard 3.0 ★★★★½
BEST BUY
Pros: Easy to use. Support for standard Macintosh interface features (windows, dialog boxes, and so on) lets you build "official" programs without coding. "Automatic" graphics functions (drop shadows, highlighted buttons, and so on) give projects polish. New Roadster extension allows SuperCard projects to communicate over the Internet. Cons: Card/stack metaphor is too rigid. Mac OS-style windows make presentations look too much like applications. Interface can be confusing. Price: $329 (estimated street).

Allegiant Technologies
San Diego, CA
800-255-8258
619-587-0500
www.allegiant.com

HyperCard 2.3.5 ★★★½
Pros: Excellent value. Easy to learn and use. AppleScript support enables projects to control other programs. New Button Tasks reduce need for scripting. Cons: Card/stack metaphor doesn't mesh well with standard Mac OS and Windows interfaces. Primitive graphics tools. Price: $99 (estimated street; includes LiveCard 1.1, for publishing over the Internet; MovieCleaner LE; and Myst).

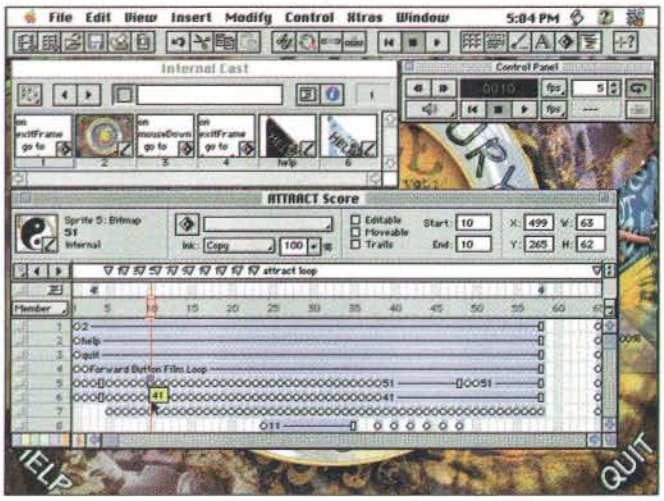
Claris
Santa Clara, CA
800-544-8554
408-727-8227
www.claris.com

ClickWorks 1.2 ★★★
Pros: Extremely easy to learn and use. Projects can be linked dynamically to external databases and Web sites. Cons: Produces slow-running programs. Comparatively expensive. Price: $850 (estimated street).

Pitango Multimedia Systems
Bedford, MA
800-675-5666
617-275-5150
www.pitango.com

begin playing before they are fully downloaded. Director also allows you to incorporate Web links into your Director applications, allowing updates to CD-ROM data over the Web, for example. Web support in mTropolis will have to wait until version 2.0, which was in beta as this story went to press: Besides providing streaming playback of projects over the Web, mTropolis 2 promises to allow objects in different applications to exchange messages over the Internet — an enticing prospect for creators of networked games.

AMT's support for Web technology is practically nonexistent, although AMT does excel in one area tangentially related to the online world: Its support for QuickTime VR — frequently used for creating virtual environments on the Web — is unmatched. AMT makes it extraordinarily easy to incorporate interactive elements in VR scenes. QuickTime VR support is also a strength of mTropolis, as is its proprietary animation format, mToon, which provides exceedingly fast playback. The current version provides run-time players for the Mac OS and Windows.

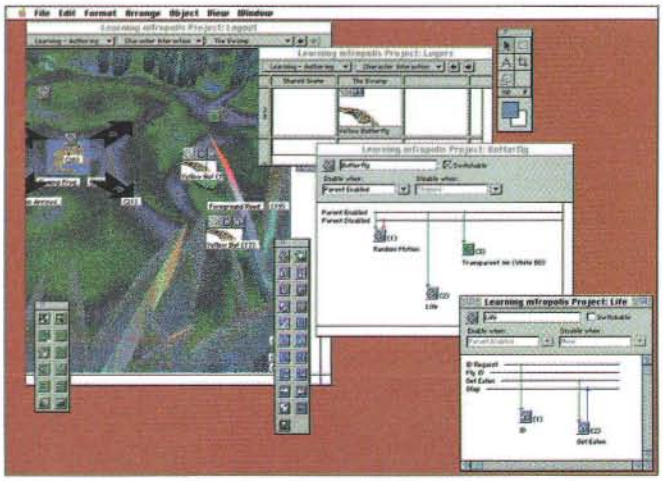


Macromedia Director's Score and Cast windows allow for precise manipulation of multimedia elements and their actions over time.

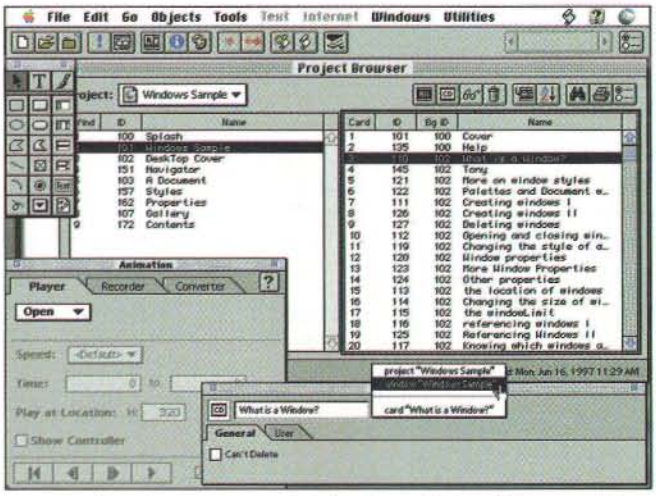
Corporate Communicating

The chief attributes of an effective authoring tool for business communications are simplicity and polish: You want to be able to whip together a presentation or a product demo in a couple of hours but not have it *look* as though it was a two-hour project. All three tools we considered in this category — HyperCard 2.3.5, SuperCard 3.0, and ClickWorks 1.2 — can get the job done.

HyperCard, the first multimedia authoring tool and the product that brought the world hyperlinks, was once *the* tool for developing interactive content. Its central metaphor has text,



mFactory's mTropolis lets you nest simple object behaviors to form more-complex behavior sequences.



SuperCard's Project Browser and Animation palette add improved Mac OS-like capabilities and a Mac look and feel to the card/stack metaphor inherited from HyperCard.

EDUCATIONAL AUTHORING

Authorware 4 ♦♦♦♦ Pros: Custom tools for creating automated training include prebuilt buttons for true/false and multiple-choice quizzes. Intuitive flowchartlike approach makes projects easy to build and modify. Cons: Expensive. Flowchart metaphor not very flexible. Price: $2,200; in Studio bundle that also includes Director 6, SoundEdit 16 plus DECK II, and xRes 3, $3,150 (estimated street).		**Macromedia** San Francisco, CA 800-326-2128 415-252-2000 www.macromedia.com
HyperStudio 3.1 ♦♦♦♦ BEST BUY Pros: Easy to learn and use. Projects can link to one another or to Web sites. Built-in digital-camera and scanner controls. Built-in testing tools. Generous clip-media library. Cons: Card/stack metaphor not very flexible. Price: $199.95; 5-pack, $450; 10-pack, $795.95 (list).		**Roger Wagner Publishing** El Cajon, CA 800-497-3778 619-442-0522 www.hyperstudio.com
Digital Chisel 2.1.4 ♦♦♦½ Pros: Very easy to use. Includes quiz templates. Logs test results in database. Cons: No Windows support. Price: $109; 5-pack, $349; 10-pack, $599 (direct).		**Pierian Spring Software** Portland, OR 800-213-5054 503-222-2044 www.pierian.com

Listing is alphabetical within groups of equal mouse ratings.

Go to **www.macuser.com/bookmarks**
for one-click access to sites related to multimedia, such as:

Lingo User's Journal
Read up on Lingo, XObjects, and Xtras programming for Macromedia Director and Authorware.
www.penworks.com/LUJ

The Association for Multimedia Communications
Get access to the Double Click newsletter, event information, technical discussions, classified ads, user groups, and links.
www.amcomm.org

International Interactive Communications Society
Find info on news, events, and job listings and links to local-chapter Web sites.
www.iics.org

images, and other media elements arranged in scenes called *cards*, which are combined in *stacks* bound together by *hyperlinks* — clicking a link on one card opens another card within the stack. The popular cards/stack approach persists in several other products, including SuperCard and HyperStudio.

HyperCard languished for some years as Apple shifted attention to AMT and it was late to support color images, but the current version, 2.3.5, supports color depths up to millions of colors and offers a respectable assortment of powerful features as well. For example, new tools make it easy to create "button families" that behave like radio buttons or check boxes; to generate user-options lists; and to perform such tasks as playing movies, playing and recording sounds, moving from card to card, and adding visual effects without resorting to HyperTalk, HyperCard's simple scripting language. Even more powerful is HyperCard's ability to control any application that supports AppleScript: You can use HyperCard to update a FileMaker Pro database, for instance, or to manipulate items with the Finder. With a price of $99, including the LiveCard add-on, for publishing stacks on the Internet (see the "Web Connection" sidebar), and MovieCleaner LE, it's a terrific bargain.

SuperCard, a descendant of HyperCard, inherits all of HyperCard's features, including HyperTalk scripting, the hyperlinking capability of words and phrases, and the card metaphor. But now at version 3.0, it's more mature, more powerful, and easier to use than HyperCard.

One of SuperCard's best features is its ability to escape the card/stack metaphor. SuperCard is the easiest tool for creating applications with "official" Mac OS windows, dialog boxes, and menus. Even more impressive, the ClickScript tools, new in SuperCard 3.0, let you produce these applications without writing a single line of script. If you'd prefer to design a custom interface for your presentation, you can use SuperCard's automatic graphics features to highlight buttons or render them in a variety of 3-D styles. SuperCard can detect the mouse location and execute scripts, so any pixel on the screen can be hot.

In the quest for the holy grail of nonscripted authoring, Pitango's ClickWorks deserves its due — probably no tool is easier to use. In an approach similar to that of AMT, you build ClickWorks projects by linking scene boxes in a project-map window and then add media elements to individual scenes. You can arrange and view elements within a scene in a Finder-like hierarchical menu, and well-organized palettes let you control the behavior of such media elements as embedded movies and hypertext links.

ClickWorks offers powerful text handling, a simple way to connect databases to presentations, a variety of templates, and an extension for creating hybrid CD-ROM/Web presentations that offers online updating of single images and text files. Version 1.2 also has system extensions for playing QuickTime VR movies. The program is designed for novices and educators, but its utter lack of scripting options prevents it from being powerful enough to build commercial applications. What's more, presentations generated in ClickWorks run more slowly than those built with other tools. Business users will find ClickWorks easy to use and quick for managing presentations; we only wish it generated faster applications.

Classroom Interactivity

It's no news to teachers that the most effective type of instruction draws in students and gets them involved in the subject matter. A growing number of teachers are learning that they — and

The Web Connection

Want to wire your multimedia for the Web? We checked out your options and found some tools with

Marionet 1.1.1 (♦♦♦♦; $150 estimated street) adds network functionality to Macromedia Director and lets you build applications that integrate data from a server. But this Director Xtra is not for novices: You need considerable Lingo-scripting experience to launch and communicate with Marionet, and you must be intimate with Internet protocols.

With Marionet, a Director project on the Web can function as a type of "server," dynamically posting documents to Web sites and constructing new pages customized for Web users. You can even set up live chat areas and "smart agents" that search the Web for specific information.

Besides support for various Internet protocols, Marionet's key features include asynchronous operation (which allows multiple simultaneous Internet sessions). You can, for example, program Director movies to collect e-mail while downloading a file from an FTP site.

Macromedia Shockwave is great for delivering Director content over the Web, but Marionet enables Director to *control* a Web site and generate custom pages on the fly. Marionet teamed with Director may be the most comprehensive Web-publishing tool a multimedia pro can buy. **Allegiant Technologies, San Diego, CA; 800-255-8258 or 619-587-0500; www.allegiant.com.**

Emblaze Creator 2.0 (♦♦♦; $995 direct) is an easy-to-use tool designed for creating Web-based multimedia. You can embed bitmapped images, vector graphics, sound, animation, and video into a Web page, and viewing them on the Web requires no browser plug-in.

No server application is needed, as client machines simply download a streaming 60K Java applet that contains Emblaze Player. Playback is multiplatform, with support for the Mac OS; Windows 3.x, 95, and NT; OS/2; and UNIX.

Emblaze Creator's drawing tools let you tweak Macromedia FreeHand or Adobe Illustrator drawings, but for best Web results, you're confined to Emblaze Creator's color palette and restricted from using objects that have gradients, cropped objects, or single-pixel lines. Vector graphics larger than 255 x 255 pixels must be segmented and reassembled in Emblaze Creator.

One of the program's handiest features

their students — can use interactivity to foster participation in lessons and for creating reports. The teaching tools we evaluated for this roundup differ dramatically in capability and sophistication, but all three — Authorware 4, Digital Chisel 2.1.4, and HyperStudio 3.1 — share several of the same goals. Each includes prebuilt tools for assembling and presenting multimedia plus tools for quizzing users and logging quiz results.

Among the three educational products, Authorware is the most full-featured — and by far the most expensive. Designed specifically for building computer-based training (CBT) applications, it's not for kids. Authorware uses an intuitive flowchart metaphor for project design. You use the flowchart to place media in your presentation and to chart the paths by which your audience will navigate it. You place different symbols at the forks in the flowchart to specify whether a student must answer a question, solve a puzzle, or perform some other task before continuing. Prebuilt quiz elements allow you to create multiple-choice, true/false, or fill-in-the-blank tests and to track right or wrong responses, the amount of time it takes a student to answer each question, and so on.

Authorware is far less flexible than its sister program, Director, but its more rigid structure makes it easy for teachers (as opposed to multimedia specialists) to get up and running. And the straightforward logic also simplifies modification of Authorware-generated applications: Instructors who want to change a presentation quickly don't have to use the original authoring team, which makes presentations highly portable. If you want applications to be more free-form, you can embed Director projects within your Authorware presentation.

The two lower-cost educational programs, Digital Chisel and HyperStudio, are far simpler than Authorware and are well suited for use by teachers as well as students. Both offer text-to-speech capabilities (enabling your Mac to read questions aloud), and both include ready-made interactive exam and quiz formats, including true/false, multiple-choice, fill-in-the-blank, and matching-item questions.

Digital Chisel lets you create frame- and path-based animation quickly, and it excels at creating slide shows that have transitions and minimal interactivity (such as the ability to click on objects). It can also control videodisc players and incorporate video into presentations. However, the program offers no Windows compatibility for presentations you create.

HyperStudio is slightly pricier than Digital Chisel but is far more versatile — and is our recommendation for general classroom use. Based on the HyperCard metaphor of stacks of cards with buttons, HyperStudio hides most of its complexity in dialog boxes. It provides tools for linking cards and buttons to Web sites and tabulating right and wrong responses and multiple-choice answers. Besides supporting all media types, it also offers spell checking, path-based animation, and digital-camera support. HyperStudio's player lets you distribute stacks, and the company offers a Windows version that can share the same files. Finally, HyperStudio comes with a hefty library of clip sounds, images, and movies, so you can get started on projects right away, without worrying about source material.

The Final Take

For professional multimedia developers, Macromedia Director, with its powerful scripting language, wide variety of Xtra plug-ins, robust Web support, and new drag-and-drop behaviors, is the most well-rounded authoring tool available. And the Director Studio bundle, which includes the Extreme 3D modeling and animation tool, the SoundEdit 16 audio editor, and the xRes image editor, offers impressive bang for the buck.

For creating business presentations, Allegiant's SuperCard 3.0, with its impressive new ClickScript tools and support for publishing on the Web, is the best available environment for pulling together polished, professional-looking demos and presentations with little or no scripting.

And for those in the education crowd, Roger Wagner Publishing's HyperStudio 3.1 provides a good balance of ease of learning, flexible authoring options, Web support, and cross-platform versatility.

Tony Bove, the author of more than a dozen books, uses multimedia-authoring tools for such professional, if somewhat unconventional, projects as producing the Haight-Ashbury in the Sixties! CD-ROM and maintaining the Rockument Web site, at www.rockument.com.

powerful features, suited for various skill levels.

is its display of memory used for each frame in the TimeLine and for each image in the Draw window. This helps you optimize playback for low-bandwidth Net connections and low-memory machines.

Emblaze Creator is intuitive and easy to use, but its JavaScript-compatible language is less sophisticated than Director's Lingo. For professionals, Emblaze Creator doesn't offer the power, advanced interactivity, or smooth animation features that Director does.

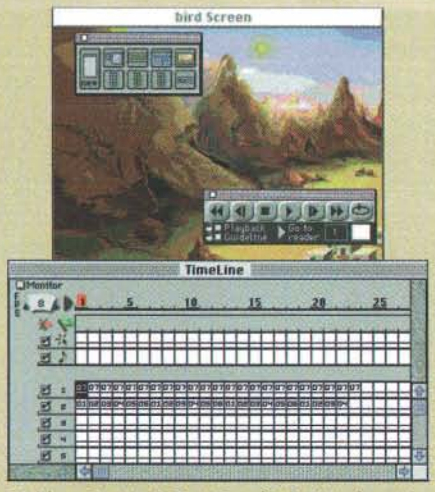
Geo-Interactive Media Group, Givataim, Israel; 888-436-4999 or 602-902-5913; www.emblaze.com.

LiveCard 1.1 (♦♦♦; $149.95 direct; free with HyperCard 2.3.5 Value Bundle) lets you put HyperCard stacks on a server (a 30-day-trial version of WebSTAR is included) and run any stack on the Web — with no extensive preparation.

It can display cards in any Web browser either graphically or as text that it changes on the fly to HTML code. You can customize how the cards are displayed — for example, as a "basket" that remembers user choices (useful for creating a virtual shopping cart for online stores).

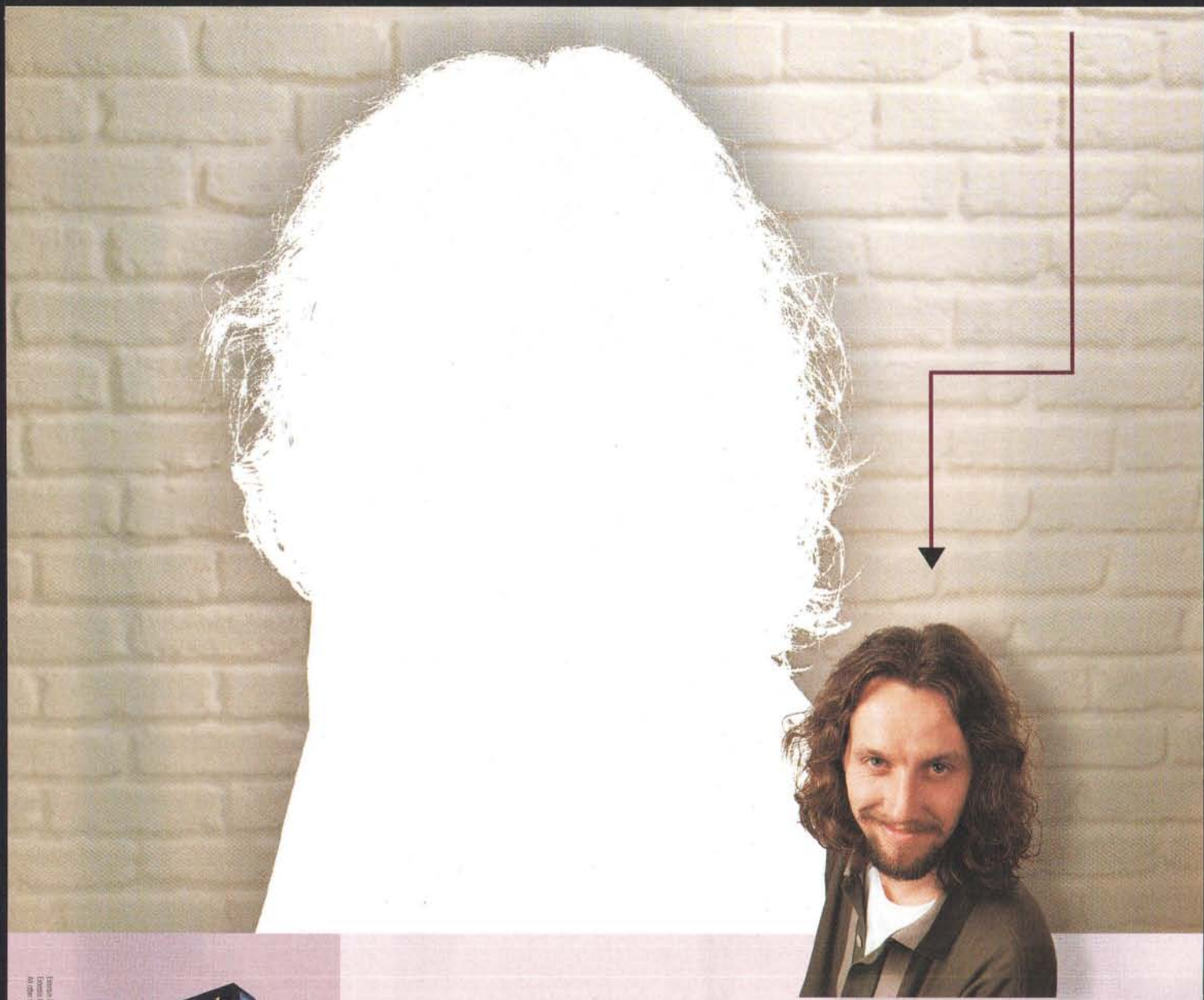
LiveCard turns HyperCard into a custom client/server-software development tool that runs AppleScript scripts and communicates with other applications. But it's not for the server-squeamish: fine-tuning LiveCard's performance requires reasonable server know-how.

Royal Software, Largo, FL; 800-888-7667 or 813-581-6422; www.royalsoftware.com.



Emblaze Creator's TimeLine (at bottom), used for sequencing multimedia elements over time, strongly resembles Macromedia Director's Score.

GO AHEAD. KNOCK YOURSELF OUT.



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Hot Picks

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By Tonya Engst
graphicsuser@macuser.com

Style Sheets 101

Looking for a faster, better way to style Web sites? Bone up on the next big thing to hit the Web.

Illustration · Elizabeth Lada

Life's too short for the time it takes to try out various Web-site layouts. If you use a green-and-purple color scheme for a big site, for instance, it could take hours to switch backgrounds and text to orange and blue. If you carefully insert invisible GIF images in your pages in order to indent text, you'll be loath to remake and reinsert them just to change the indent. But now an answer is in sight for frustrations such as these — Cascading Style Sheets, level 1, otherwise known as CSS1. If HTML 2.0 changed your life a few years ago, hold onto your hat.

Cascading style sheets can give you the power to place page elements in specifically positioned blocks, set margins, and specify type, all without using kludges or tricks. If that wasn't enough good news, these style sheets also make it easy to change the look of a page, or even an entire Web site, very quickly, much as their siblings do in page-layout applications (see the "Three-Step Site Styling" figure).

As of now, use of cascading style sheets stands to become an important new Web-site design technique. CSS1 has the seal of recommendation from the World Wide Web Consortium (the W3C); Microsoft partly implements style sheets in Internet Explorer 3.0; and as of this summer, Netscape Communicator 4.0 supports them as well.

Although they're not universally adopted yet, there's no doubt that style sheets are the next big thing to hit HTML. Whether you want to master them or merely appreciate them, we'll fill you in on the basics and help you stay ahead of the curve.

School Supplies

Chances are good that your Web authoring software does not support style sheets. (Hopefully this will change by the time you read this. At press time, Astrobyte's BeyondPress QuarkXPress XTension did. A few add-ons were available for Adobe FrameMaker and BBEdit. Media Design in*Progress had announced CSS Manager, a new product devoted entirely to generating style sheets). What this means is that, like almost all leading-edge Web designers, you may need to soil your hands with some direct HTML editing.

Be careful if you add your style tags within a WYSIWYG editor, as the editor may modify the information behind your back. In our testing, Symantec Visual Page and Adobe PageMill retained the stylesheet information we inserted. When we tried Claris Home Page, however, the application deleted the information we'd added. If you have problems with your WYSIWYG editor, your best bet is to use a text editor, such as Apple's free SimpleText, or an HTML tool, such as Bare Bones Software's BBEdit, when you create your style sheets.

Lesson 1: A Simple Style

We'll begin with an easy example — adding a style attribute to a paragraph tag in an HTML document:

```
<p style="color:green; text-
align: center">The Emerald
City of Oz<p>
```

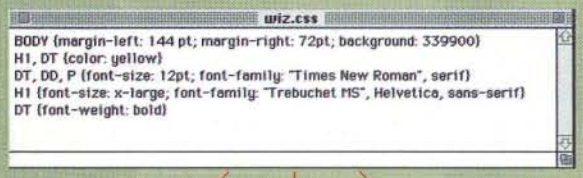
As you might have guessed (if you're a little HTML-savvy), this style attribute centers the paragraph and turns the text green. You can add a style attribute such as this to almost any HTML tag, be it a heading, block quote, address, or list item. By itself, this technique can be useful, but it's only the tip of the iceberg.

Cascading Style Sheets, level 1, W3C Recommendation
Get to the nitty-gritty with this technical guide, at www.w3.org/pub/WWW/TR/REC-CSS1

A User's Guide to Style Sheets
Find out which style-sheet options actually work in Microsoft Internet Explorer 3.0 at www.microsoft.com/workshop/author/css/css.htm

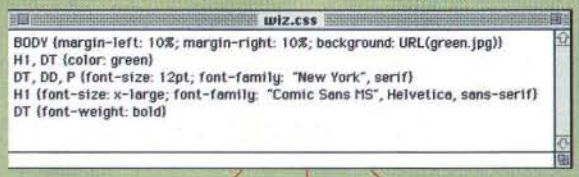
Three-Step Site Styling

1. Link a style sheet to your Web pages.



2. When you want to change the site's look, just modify the style sheet.

3. Your Web pages update automatically.



Lesson 2: Styling a Web Site

It's a common dilemma: You want to specify a heading font, and you want to indent paragraph text for an entire site. Without style sheets, you could use a variety of techniques, but these invariably require fuss, bother, and time. Further, if you change your mind about the font or the indent, you have to redo all the pages. Here's how to set up a style sheet that accomplishes the changes you want:

1. Create a style sheet. Style-sheet files can have any name, but the name must end with the extension *.css*. For this example, create a text file named sheet.css. (If you don't have a third-party text editor, use SimpleText.) Within that file, type the following:

```
h1 {font-size: xx-large;
font-family: "Comic Sans MS",
Helvetica, sans-serif}
p {font-family: "Times New
Roman", serif; margin-left:
5%; margin-right: 5%}
```

2. Link a Web page to the style sheet. In an HTML document that contains h1-tagged headers and p-tagged paragraphs, add this line (it can go anywhere in the header; if you aren't sure where to put it, place it directly after the <HEAD> tag):

```
<link rel=stylesheet
href="sheet.css" type="text/
css">
```

You can put this line in the header of as many HTML documents as you like.

3. Place sheet.css and your HTML documents in the same folder.

4. Test the style sheet by opening one of the HTML documents with a style-sheet-savvy browser. If you have Comic Sans MS installed on your computer, the h1-tagged headings should display in that font. Otherwise, the headings will show in Helvetica or (if you don't have Helvetica installed) in a default sans serif font. Similarly, p-tagged paragraphs should appear indented and display in Times New Roman or your browser's default serif font. Although a browser can't display fonts that aren't installed on the viewer's hard disk, it will attempt to find a font listed in the hierarchy you specify, even down to the level of a generic serif or sans serif font.

If you have only a few pages linked to the style sheet, you aren't saving all that much time. If, however, you have tens or hundreds of pages linked to the style sheet, you've got a fast and elegant technique for changing the look of the entire site.

The ABCs of Style-Sheet Syntax

Now that you've done some basic experimentation, let's go a little deeper and examine style-sheet syntax by looking at style-sheet commands.

Think of a style sheet as a list of rules. Each rule starts with one (or more) tag names, called *selectors*. The rest of the rule must be inside curly brackets. Inside the curly brackets sits at least one *declaration*. A declaration consists of a *property* and a *value*. (In the declaration `{font-size: x-small}`, `font-size` is the property and `x-small` is the value.) Declarations can be in any order, but if you use more than one, you must separate them with a semicolon. Also, notice that values for `font-family` are in quotes if they contain spaces. This is terribly picky stuff, but the learning curve is worth climbing — you'll get up to speed much more quickly. To see a style-sheet rule broken down into its parts, see the "Power-User Tip" figure.

Imagine now that you want to change the font and margins of the <p> tag. To make the change, simply modify the style sheet, as follows:

```
{p font-family: Helvetica,
sans-serif; margin-left: 10%;
margin-right: 10%}
```

You can also add more rules to the style sheet. Here's an example:

```
BLOCKQUOTE {font-size: 12pt;
font-family: Monaco,
monospaced; color: yellow;
background: blue}
```

This rule has two previously unmentioned properties (or styling options) — `color` and `background` — which cause block quotes to show up as yellow text on a blue background. There are many properties peppered throughout this article, but for a list of common properties, see the "Quick Guide to Style-Sheet Properties" table. Some of the most exciting options for designers — those that enable you to position entities at will on a page — aren't yet supported by a shipping Mac browser.

Additionally, those who want to take style sheets to the max should note that a handy way to apply the same declarations to all entities is to put them in a `BODY` rule. For instance, this would be a fast way to consistently create a wide left margin.

Exceptions to the Rule

You might recall that you can set up styles simply by putting a style attribute in a normal HTML tag (see "Lesson 1"). Devil's advocates may be wondering what happens if a style attribute contradicts style guidelines coming in from an external

style sheet. The answer is easy — the style attribute overrides the external style sheet. As styles pour or, rather, "cascade" into a Web page, they flow around obstructions such as style attributes.

You can set up sophisticated obstructions — for example, your document may contain a section that requires a different style from the one set up in the style sheet. To override the style-sheet style, you can enclose the section in a `<SPAN>` tag pair. Here's a brief example:

```
<SPAN STYLE="text-align:
center; color: blue">yada
yada yada</SPAN>
```

Another important cascading technique involves using *classes*. Basically, this is a way to create a shorthand for commonly used styles. Instead of specifying an HTML tag as a selector, you can invent a name. This name can then be used to modify any individual HTML element on a Web page, such as a heading, list item, or paragraph. For example, a class set up in a style sheet might look like this:

```
.slipper {font-family: Monaco,
monospace; color: red}
```

(Notice that `slipper` is preceded by a period. Whenever you set up a class, you must begin the rule with a period.) Now, every time you want to use red Monaco type in the HTML documents linked to your style sheet, you can simply use the shorthand `slipper` instead of rewriting the entire rule again. For example, to make a paragraph display in this way, the only tag required would be

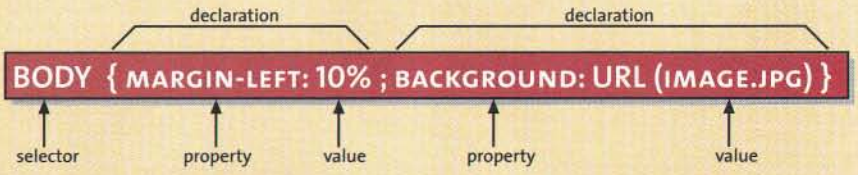
```
<p class=slipper>
```

Later, if you decide you really hate red Monaco type, you need only change the `font-family` value of the `slipper` class in the style sheet.

Power-User Tip *Anatomy of a rule*

Style-sheet geek-speak is worth learning if you want to get up to speed fast. A style sheet comprises strings of code, called rules, which dictate what your Web pages will look like. We've outlined a rule for you here.

Notice that the rule associates a certain HTML tag with specific styles. The HTML tags include *selectors* (the tags the rule applies to), *properties* (the types of styles set up by the rule), and *values* (which specify exactly how the styles are set up). This figure shows a rule that associates the `BODY` tag with a left-margin property and a 10% value. Properties aren't always what you'd traditionally think of as styles — notice how this rule also associates `BODY` with a background image called image.jpg.



Go to the Head of the Class

By now you have a good appreciation for how CSS1 allows additional creativity and experimentation while saving serious amounts of time. Cascading style sheets don't solve every formatting problem Web designers struggle with, but they do point the way to a future in which HTML tags can be used to define document structure and in which HTML styles can at least *suggest* how Web pages should appear. If you decide to seriously implement style sheets, you'll be taking your Web site into uncharted territory, but now you'll be well prepared for the next HTML adventure!

Tonya Engst is a senior editor for TidBITS and wrote the HTML chapter for Internet Starter Kit for Macintosh, *fourth edition. Her home page is at www.tidbits.com/tonya.*

A Quick Guide to Style-Sheet Properties

Style sheets are many-faceted things — you can use them to specify background or text color, font size, or a host of other styling options. In techie terms, each of these options is a *property*. Check this table for a summary and explanation of properties mentioned in this article, all of which should work in a style-sheet-savvy browser.

Property	What It Does	Examples

background	Sets the background color or image. Commonly used with the `BODY` tag to color a page but also works with any body element, such as an anchor tag, in the third example here.	`BODY {background: green}`
		`BODY {background: (image.gif)}`
		`A {background: #00FF00}`

color	Colors text.	`BODY {color: blue}`
		`H1, H2 {color: #0066FF}`
		`.note {color: green}`

font-family	Sets font family. (Put quotes around font names that contain spaces.)	`P {font-family: "Times New Roman", Palatino,serif}`

font-size	Sets text size. Relative units such as `x-large` are preferred, but points (`pt`), inches (`in`), centimeters (`cm`), and pixels (`px`) also work.	`P {font-size: x-large}`
		`LI {font-size: x-small}`
		`H1 {font-size: 18pt}`

font-weight	Sets type thickness.	`BLOCKQUOTE {font-weight: bold}`
margin-left	Sets left margin. Relative percentages are preferred, but points (`pt`), inches (`in`), centimeters (`cm`), and pixels (`px`) also work.	`BODY {margin-left: 25%}` `P {margin-left: 25pt}`
margin-right	Sets right margin.	`BODY {margin-right: 10%}` `P {margin-right: 7pt}`
text-align	Justifies text.	`H1, H2, H3, P {text-align: center}` `.comment {text-align: right}`

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Adobe Systems, San Jose, CA
800-833-6687
716-447-7303 (fax)
www.adobe.com

Type Foundry
Bitstream, Cambridge, MA
800-522-3668 or 617-497-6222
www.bitstream.com

Type Foundry
ITC, New York, NY
800-343-8973 or 201-845-6100
800-656-6853 (fax)
www.itcfonts.com

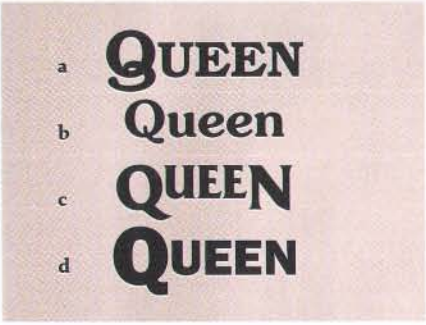
By Janet Ashford
graphicsuser@macuser.com

Grade-A Lettering

Use Adobe Illustrator to create custom display type with old-fashioned appeal

Bright reds and yellows popped from the California fruit-crate labels printed in the '20s and '30s. Artists outlined their hand-lettered display type in black or contrasting colors and often personalized it by setting it on a curve or manipulating it in other ways.

Those original artists labored with pencil and paint, but you can emulate their vintage typographic style in a PostScript drawing program such as Adobe Illustrator or Macromedia FreeHand. By adding strokes, solid fills, and gradients to basic fonts; skewing or setting type on a path; or converting the type to



1 Choose a group of fonts, and begin experimenting with size.

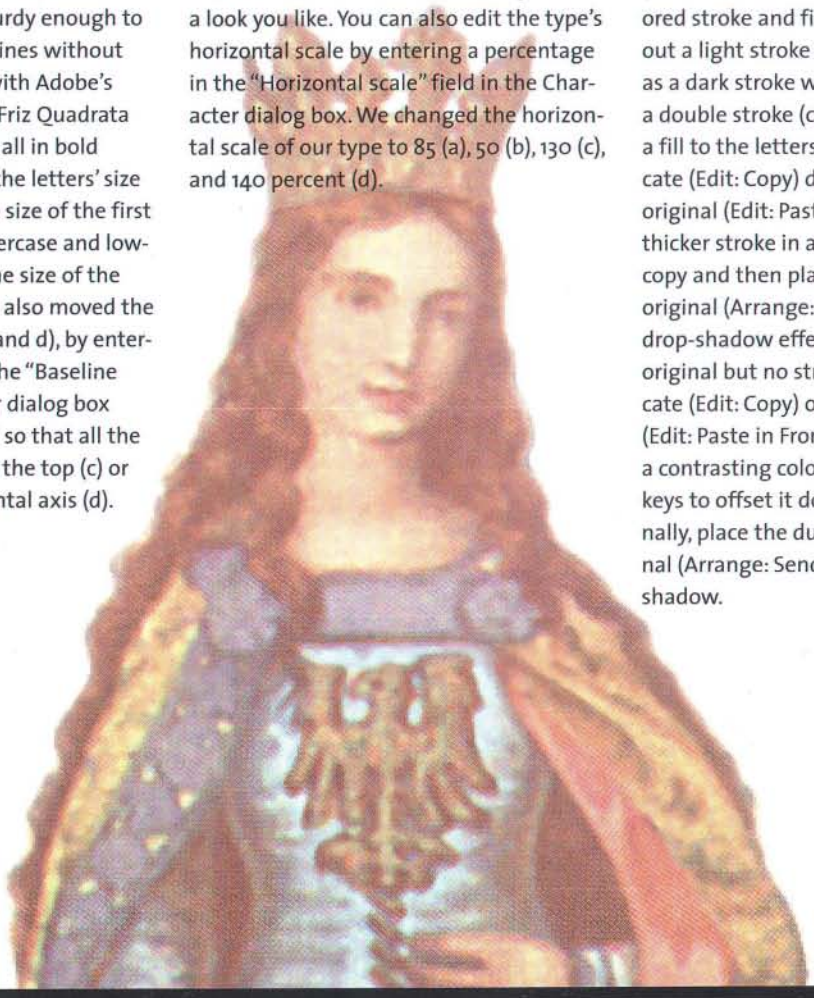
In Illustrator, try setting your logo in several fonts. Choose traditional serif and sans serif fonts that are sturdy enough to be stroked with heavy outlines without loss of detail. We worked with Adobe's Bookman (a), Souvenir (b), Friz Quadrata (c), and Franklin Gothic (d), all in bold weights. Next, try varying the letters' size and case. We increased the size of the first letter (a and d), mixed uppercase and lowercase (b), and increased the size of the first and last letters (c). We also moved the large letters downward (c and d), by entering a negative number in the "Baseline shift" field in the Character dialog box (Window: Show Character) so that all the letters were either flush at the top (c) or centered across the horizontal axis (d).

2 Distort the type by editing its scale.

Use the Scale tool to make the letters fatter, thinner, shorter, or taller until you find a look you like. You can also edit the type's horizontal scale by entering a percentage in the "Horizontal scale" field in the Character dialog box. We changed the horizontal scale of our type to 85 (a), 50 (b), 130 (c), and 140 percent (d).

3 Customize the letters' stroke and fill.

Use the tools in the Paint Style dialog box (Window: Show Paint Style) to apply a colored stroke and fill to your type. We tried out a light stroke with dark fill (a) as well as a dark stroke with light fill (b). To create a double stroke (c), apply both a stroke and a fill to the letters and then paste a duplicate (Edit: Copy) directly on top of the original (Edit: Paste in Front). Apply a thicker stroke in a contrasting color to the copy and then place the copy behind the original (Arrange: Send to Back). To create a drop-shadow effect (d), apply a fill to your original but no stroke. Then paste a duplicate (Edit: Copy) on top of the original (Edit: Paste in Front). Fill the duplicate with a contrasting color and then use the arrow keys to offset it down and to the right. Finally, place the duplicate behind the original (Arrange: Send to Back) to create the shadow.



Type Foundry
Monotype Typography, Elk Grove Village, IL
800-666-6897 or 847-718-0400
847-718-0500 (fax)
www.monotype.com

Font Distributor
Image Club, Calgary, AB, Canada
800-661-9410 or 403-262-8008
www.imageclub.com/fonts/

outlines and manipulating the points, you can dress up letterforms and make them uniquely yours. Display type with this old-fashioned look can enhance many different types of design projects, including (most naturally) labels for upscale food products such as gourmet vinegar, mustard, olives, and pasta.

We'll take you through the process of creating a custom logo and label for a mustard jar. (The menu commands used here are for Illustrator 6.0, but with slight modifications, they can easily be translated to version 7.0.) We'll start by setting our product name in several different fonts. Then we'll experiment with the letters' size, baseline, color, and other features. To top off the logo, we'll add a shimmering, multicolored gradient fill. By following these steps, you can create fancy finished display type with a look that belies its simple origins.

Janet Ashford is the coauthor of Start with a Scan: A Guide to Transforming Scanned Photos and Objects into High Quality Art *(Peachpit Press, 1996) and the upcoming* Start with a Shape: A Designer's Guide to Desktop 3D *(Peachpit Press, 1998). Visit her Website at www.jashford.com.*

4 Tinker with the type's shape.

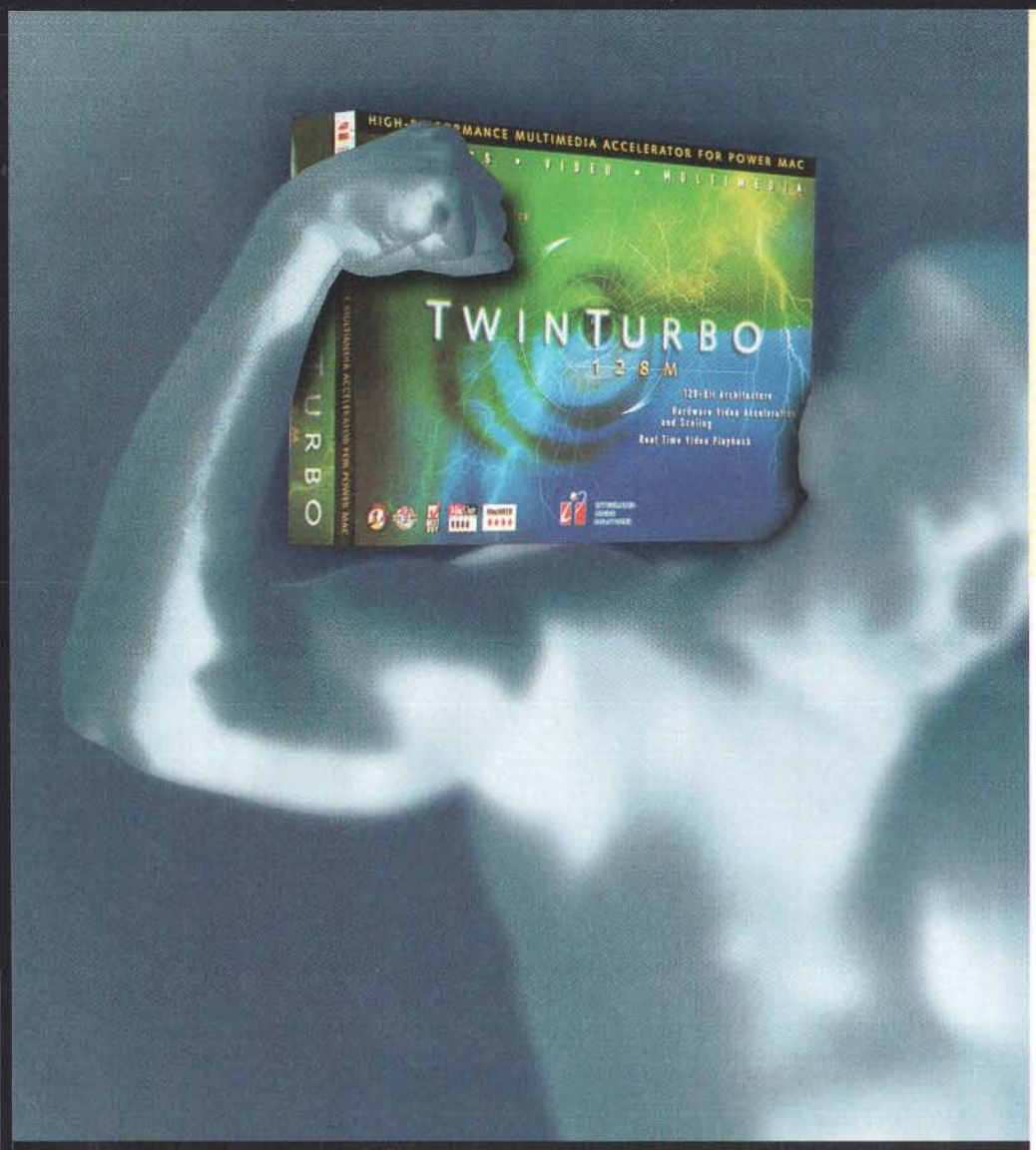
To set the type on a curve (a), we drew a curved path with the pen tool, clicked on the path with the Path Type tool, and entered the word. To skew the type (b), we selected it and clicked and dragged with the Shear tool. We edited the shape of the letters (c) by converting them to outlines (Type: Create Outlines). We then used the Direct-selection tool to select each point along the type's bottom edge and then pulled the outside points down one by one to meet steeply inclined guidelines. Finally, to create a horizontal bar beneath the type (d), we converted the type to outlines and then selected the two points at the right edge of the Q's tail and dragged them to the right.

5 Add a glowing gradient fill.

We chose the customized Friz Quadrata version of *Queen* to be our logo. We then filled it with a glowing Gradient fill. To create a custom gradient, open the Gradient dialog box (Window: Show Gradient) and choose your starting and ending colors. We selected five shades of yellow, pink, and orange for our gradient, making sure to choose light intermediate and ending colors to create a shimmering effect. After completing the gradient, we filled our type with it. (Don't forget: To add a gradient to type in Illustrator, you must first convert the type to outlines.) We then finished the logo by adding a black background and stroked type above and below the word *Queen*.

6 Create the label background, and finish up in Photoshop.

To complete your label, first draw a background shape in Illustrator. We drew a shape to suit our jar and filled it with yellow. Add any other type the label needs, and save the graphic. Now you're ready to add the final touches in Photoshop. Open the graphic, and create a new layer (Layers: New: Layer) for any images you want to add. We pasted in a drawing of a medieval queen that we'd scanned from an old book and isolated from its background. Pasting this image into a separate layer made it possible to scale and position the image without disturbing the label underneath.



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BackWeb
BackWeb Technologies
San Jose, CA
www.backweb.com

By Jason Snell
jason@macuser.com

When Push Comes to Shove

Is your Web browser passé?

SO YOU'VE FINALLY figured the Web out. You've learned what a URL is, grasped the concept of hyperlinks, and even bookmarked your favorite sites. Little did you know that while you were up nights surfing the Web, your browser became totally uncool. The latest thing to hit the Web is something called *push*, a catchall name for technology that helps you get information off the Net without your looking for it yourself.

The advocates of push technology insist that people don't like to spend time trolling for information on the Net. In push-ese, using your Web browser is *pull* — something you have to participate in. Surfing the Net, they say, is too much like digging through a card catalog and not enough like watching TV. (A year ago, surfing the Net was cool *because* it freed you from being just another couch potato, but hey, this is 1997 — TV's in again.)

So why all the buzz about push? People are starting to realize the powerful new possibilities that come from the world's computers being linked together. One day, they say, personal computers might be able to sort through all the world's information — picking and choosing the bits relevant to you. In its perfect form, then, the Ultimate Push Technology would be like TV — but one with a single channel showing exactly what you want to see. For anyone who's been subjected to *Suddenly Susan*, that's a really exciting prospect.

But despite the hype, it's best not to get your hopes up just yet. Right now, push technology is in its infancy. Three major software packages are available for the Mac: Marimba's Castanet Tuner, The PointCast Network, and BackWeb. All of them work roughly the same way — they do the surfing for you.

Just-Me TV

With PointCast, you decide what information you'd like to receive. You could choose to see business news from the *Wall Street Journal*, ZDNet's Mac shareware file of the day, or baseball scores. PointCast will regularly download all the information for you from a remote server. When you're ready, you launch the application and sort through a listing of stories. Clicking on a headline brings up the story itself. If you let your machine idle, PointCast turns into a screen saver and displays headlines on your screen, along with a ticker that can display stock prices.

Sounds great, but unfortunately PointCast doesn't know how to choose exactly the right stories for you, so instead it downloads *everything* related to your topic. That includes the lengthy interview with the popular movie star you can't stand or the in-depth feature about a company you couldn't care less about. The result is useless data streaming over the Internet, slowing the whole network down and filling your hard disk with junk.

And although PointCast is called push technology, the truth is that using it involves a whole lot of pull. Clicking through channels, scrolling through stories, and reading them in the program's big viewing pane isn't a whole lot different from surfing the Web. At its core, PointCast is really just a Web browser with a bunch of preselected links.

Illustration · Barbara Pollak

Marimba's Castanet Tuner and BackWeb's eponymous application impress me a bit more. Both let you "tune in" to channels of content being broadcast by servers. One channel might be kids games, and another might be stock-market quotes. At least one notable broadcaster is even using the technology to deliver software updates to the desktop behind the scenes.

Castanet Tuner is a Java-based application that's received a lot of attention even though there's not yet much news or information available on its airwaves. Marimba has announced content partnerships with ABC News and Knight-Ridder, among others, but it's hard to tell yet just how much real potential Castanet has.

At this point, it's BackWeb that comes the closest to realizing my idea of what push should be, and for one reason — its interface. If push is supposed to reduce the amount of time I spend sorting through data, why must I toggle between categories and scroll through story listings to *find* what I want? BackWeb's information finds *me*. When a new story comes in, a small window floats up onto my screen. I can glance to see if I'm interested, or I can dismiss the infonugget and get on with my work.

But as nice as it is, BackWeb still shares the main failing of all of today's push technologies: It's not intelligent. *Every single* story that arrives on a BackWeb channel is brought to my attention, and that quickly becomes tiresome. My computer should learn my interests, in all their eccentricity, and unobtrusively let me know *only* when it's found something I really might like to see.

Pushing Onward

Of course, I don't always want to surf through hundreds of Web pages to find information that appeals to me, but I don't really want to surf the abridged contents of the Internet on my hard disk either. I'll be a happy man the day my computer is truly smart enough to do the work for me instead of making me do more work.

Jason Snell, senior editor, online, covers the Internet for MacUser. *His personal TV channel would play only reruns of* Match Game '79.

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RAID Revealed
If it's RAID that fits your backup needs, find the right type in *MacUser's* product reviews
www.macuser.com/mouse.html

By Bob LeVitus
smartuser@macuser.com

Crash, Don't Burn

Accept your hard drive's mortality — choose the right backup method before it's too late

Illustration · Randall Enos

The end is near. Do you really need to see a guy on a street corner with a sign to know the message is true? Eventually your hard drive will crash, be stolen, burn up, drown, or fall prey to some other Act of God. The question isn't so much how to *prevent* but how to *prepare for* that fateful day.

There's really only one way to help your data live on regardless of the longevity of your hard drive — back it up. With the dizzying array of drives and media made for this purpose, however, it can be hard to figure out which one is right for you. You need to consider not only the price of the drive but also the price of the medium, the medium's durability, its popularity, and the type of work you do.

Here's how to pick the backup method that fits your needs, whether it involves using just a few floppies or a whole RAID system. We also offer some tips for the other crucial part of avoiding data loss — a realistic backup strategy.

Choose Your Media

Your first step is to decide what sort of media to use, based on factors such as capacity, speed, and cost.

Floppy Disks

Ideal Users *Anyone who wants to back up a file or two easily*

For backing up a file or two, there's nothing easier than using a floppy; however, at around 60¢ apiece, 1.44-MB floppies get expensive fast if you're backing up an entire system. They'll also soon prove quite inconvenient as a routine and comprehensive backup method.

Magneto-Optical Discs

Ideal Users *Those who need flexible, long-lasting archives and don't mind a slow drive*

Magneto-optical (MO) discs are among the most stable media available and offer a wide range of storage capacities, from as little as 128 MB to more than 4 GB. MO drives are usually quite flexible, most offering backward compatibility (which means new drives can use old discs) and many also letting you swap discs with owners of other makes of MO drives.

If you need a backup device *and* a CD-ROM drive, you can get both in one device with the Panasonic PD/CD-ROM drive (estimated street price, $600). One drawback, though, is that it uses proprietary media that can't be used with other makes of MO drives.

Even though MO discs are flexible and stable, they may not be the ideal choice for you. They are relatively expensive — about $20 for 230 MB. That's certainly cheaper than the cost of floppies, but it's much more than the cost of DAT-drive media (explained later). Another disadvantage is that MO drives are slower than removable-magnetic-media drives and standard hard drives.

Removable Magnetic Media

Ideal Users *Those who transfer files to service bureaus or want their backup system to double as a hard drive*

The popular drives that use these media include the Iomega Zip (estimated street price, $230), Iomega Jaz (estimated street price, $400), Nomai Portable 540MB Drive (estimated street price, $300), SyQuest EZFlyer 230MB (estimated street price, $250), and SyQuest SyJet 1.5GB (estimated street price, $500). All work

Need Professional Help?
Check out Yahoo!'s listing of backup-service providers
www.yahoo.com/Business_and_Economy/Companies/Computers/Services/Backup

Julie's Page of Paranoia
Now that you're feeling nervous, go on, let it all out . . . .
drycas.club.cc.cmu.edu/~julie/paranoia.html

well for swapping files with other users and doing business with service bureaus. Almost all, excluding the Zip, are also fast enough to be used not only for backup but also as an auxiliary hard drive in your day-to-day work.

The price per megabyte of storage varies — you'll pay about $30 for a 230-MB EZFlyer disk, for instance, and $20 for a 100-MB Zip disk. But in general, they are a reasonable deal.

We don't recommend media in this category for long-term storage, since the disks are more susceptible to damage than many other types of media.

CD-R Discs

Ideal Users *Those who need to share data with other users; those who need to make unerasable long-lasting archives*

Since just about everyone owns a CD-ROM drive these days, a CD-R system (which writes to discs) works well if you need to distribute a lot of data to a lot of people. The individual discs themselves are long-lasting and relatively inexpensive (about $10 apiece). Each disc can store about 650 MB.

The drawback is that this method can become costly. Although the recorders themselves are *relatively* inexpensive — these days you can find one for less than $1,000 — the media can add up. You're bound to have to throw out discs when there are problems during the writing process, since CD-R discs are not rewritable. In the future, you'll have another option — CD-RW, which involves rewritable discs — but at press time, this technology was so new that we hadn't yet tested its capabilities.

Also, don't look to either CD-R or CD-RW drives if what you really need is speed. Both write and read data more slowly than those that use magnetic removable media.

Digital Tape

Ideal Users *Those who need to back up a lot of data regularly*

This is the least expensive medium per megabyte — you can store 4 GB on a DAT (digital audiotape) cartridge for only $20. As a result, it is a great backup system for people who have a lot of data they need to keep secure — whether they be artists, programmers, multimedia developers, desktop-video enthusiasts, or even system administrators.

The disadvantage of tape backup is that, unlike removable-media drives, tape drives can't be used as additional hard drives, because data access is much too slow. The tape is also easily damaged and therefore not good for long-term storage.

RAID

Ideal Users *Those who require constant access to their data due to frequent deadlines*

If you really need every bit of your data available at all times and can't afford to lose even an hour finding and loading up a disk, what you need is a Level 1 RAID system (redundant array of independent disks). Level 1 is capable of *mirroring* (writing the same data to more than one drive) and is simpler to set up than higher levels of RAID.

A RAID system can be expensive, depending on how many hard drives you decide to put into it — you'll probably need twice as many as you currently own. RAID software costs about $100.

Choose Your Software

Once you've decided on your media, you'll need the right software to make the backup process as painless as possible. If you're opting for a tape drive, the decision is a no-brainer — you need Dantz's Retrospect (estimated street price, $150). Retrospect supports more tape-drive models than most other programs. In fact, it's included with many of them. It also works well with removable-media drives and is unparalleled for its speed, flexibility, and agility in performing unattended backups.

For backing up to removable media, also consider Dantz's DiskFit Pro (estimated street price, $80) or the less configurable and less expensive DiskFit Direct (estimated street price, $40). If you already own either Norton Utilities (estimated street price, $95) or MacTools Pro (estimated street price, $100), both from Symantec, you can use their backup features in a pinch.

Exercise Some Backup Savvy

Even if you have all the right tools, they won't do you any good if you don't have a wise backup plan. Here are a few tips:

- Back up your data regularly.
- Back up everything on all of your drives. Otherwise you'll have to reinstall your system software and third-party software in the event of a fatal crash.
- Store a recent, complete backup *off-site* in case of a disaster.
- Keep more than one set of backup media.
- If your backup software doesn't help you develop a schedule, make your own and mark the dates on your calendar.

Only the Paranoid Survive

Some hard drives run for years without spilling a byte of data. Others wipe out before the warranty lapses. Since, like life, data loss is unpredictable, everyone needs a backup system. If our methods are too stringent, create a more laid-back backup regimen that suits you — it's better to back up occasionally than not at all.

Contributing Editor Bob LeVitus is the author of Macintosh System 7.5 for Dummies *and is the Mac columnist for the* Houston Chronicle.

Backup Weaponry *Approximate prices and benefits*

Floppy disk

40¢/MB
Easy for small backups

Magneto-optical disc

10¢/MB
Long-lasting

Removable magnetic disk

10¢/MB to $1/MB
Good substitute for an extra hard drive

CD-R disc

2¢/MB
Durable and unerasable

DAT (digital audiotape)

less than 1¢/MB
Least expensive medium

Photography · Lon Clark

Simply OUTSTANDING

Corel® World Design Contest 1996

Best of Show: Hedy Lamarr, a vector illustration created by John Corkery in CorelDRAW

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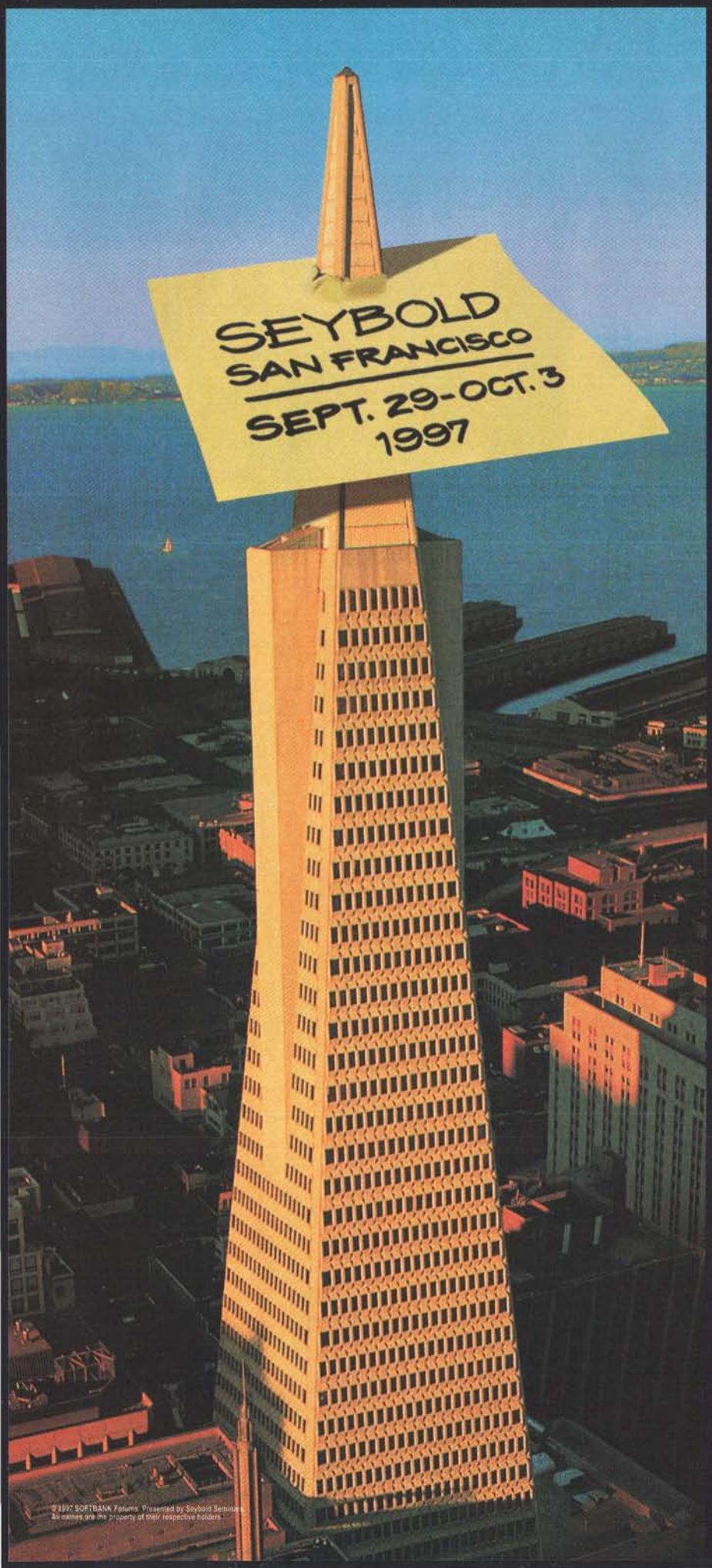

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By Bob LeVitus and Christopher Breen
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Help Folder

Switch from PCs to Macs the thrifty way, and discipline a recalcitrant hard drive

Rather Switch Than Fight

I confess — my expertise is in PC software and hardware. But I desperately want to switch my entire company to the Mac! What hardware and software might I salvage to use with the Macs?

Ambrose Wang, via the Internet

Chris: Congratulations on leaving the Dark Side. Once you've made the switch, we'll send you instructions for performing the secret Macintosh User handshake (Andy Ihnatko taught it to us).

Although the PC and the Mac are fairly different animals, there are several components you can salvage from your pile of DOS-based iron.

Bob: Let's start with modems. To turn your PC modem into a Mac modem, all you need to add is a hardware-handshaking cable. Most reputable computer shops and mail-order houses carry these around-ten-dollar babies.

Mac telecom applications are easily had. Netscape Navigator and Microsoft Internet Explorer can be found on the Web, as can Fetch, Newswatcher, FreePPP, and Eudora Lite. David Alverson's $30 shareware program ZTerm is a great all-around communications app.

Chris: You can also keep your PC printers. GDT Softworks makes PowerPrint ($100 estimated street), a cable/application bundle that lets you use any of over a thousand PC printers with your Mac.

Also, if you have any SCSI devices, save those, since they work with Macs. Of course, you'll need to reformat the hard disks with Mac formatting software such as FWB's Hard Disk ToolKit (about $125 for the full version, $60 for the Personal Edition), and if the CD-ROM drive doesn't work with Apple's CD-ROM software, you'll be looking at another FWB product, CD-ROM ToolKit ($50 estimated street).

Bob: Speaking of hardware, take a peek inside your PCs, and see if the RAM can be used in your Macs. Make sure the RAM has the same number of pins as the RAM in your new Macs and is fast enough for your Macs. (The Mac Catalog database, on *MacUser*'s Web site, shows what type of RAM each Mac requires.)

And don't forget your PC keyboards and mice. A few of the Mac-clone vendors — APS, Motorola, and PowerTools — trick out their Macs with PS/2 ports. Just plug your junky PC input devices into these ports, and you're off and typing.

Chris: We'd be big fat liars if we didn't admit that PC users have access to far more software than us Macsters. Fortunately, unlike with the PC, there's a way to run the Other Platform's software on a Mac. Insignia Solutions' SoftWindows 95 4.0 ($350 estimated street) lets you run DOS, Windows, and Windows 95 apps on your Mac — albeit at a less than spunky speed. Connectix has just shipped a brand-new PC emulator for the Mac — Virtual PC ($150 estimated street) — which unfortunately runs at poky speeds also (see the review of Virtual PC in this issue).

Of course, if you need the real thing without the embarrassment of having a DOS box on your desk, you can always plop a PC card into a PCI Mac. This type of card lets you run DOS and Windows just like the real thing, since the cards have an Intel chip. The good part is that you'll be able to run the Mac OS on the same machine. The cards start at around $800 and are available from Apple, Orange Micro, and Radius.

Tame a Drive from the Blue Side

I have many small files on an IDE drive "imported from the other guys." I know I could free up some space by partitioning the disk, but nothing works. Apple's help line has been useless, telling me to reinstall my system software. You can do better. How do you partition a disk on an IDE drive?

Wolfgang Prigge, via the Internet

Bob: Of course we can do better.

Chris: But before we do, I'll mention that disks on IDE drives that ship with most Mac models can be partitioned with Apple's Drive Setup. The exceptions are the PowerBook 150 and Macs upgraded with the Macintosh Processor Upgrade. Also, once a disk has been formatted with a third-party utility such as FWB's Hard Disk ToolKit (HDT), Drive Setup will no longer recognize it.

Bob: Wolfgang, you must have a drive that didn't come from Apple or you have an old version of formatting software that doesn't work with IDE drives. No matter the cause, the solution is the same: Use the current version of HDT, especially if you're like me and have more than one drive.

Chris: HDT isn't the only software game in town. You may be able to get an updated version of formatting software from your drive's vendor. Or you can use Anubis ($80 estimated street), from CharisMac Engineering (916-885-4420).

Bob: No matter which software you choose, just be sure to use the same software to format all your disks. You'll get more speed that way.

Crack Epidemic

My PowerBook 520c's case is cracking near the left hinge, on the screen side. How do I replace it? How much will it cost?

Jonathan Ward, via AOL

Chris: You're not the only one who's had this problem. We've heard reports that many PowerBook 500-series Macs are susceptible to this type of cracking. If, like Jonathan, you have a cracked case, I'm afraid you're out about 200 bucks. That's what it's going to cost to have a repair shop replace the case. Even then, your problems aren't over. The case may crack again, unless you perform periodic preventive maintenance.

Bob: Wait, this is starting to sound vaguely familiar. Didn't I see something about this on the MacInTouch Web site?

Chris: Bingo! Larry Bles, Apple-products manager and service technician at Micro Products, of Springfield, Virginia . . .

Bob: Home of the Simpsons . . .

Illustration · Bob Staake

RAM Swap Meet
Before you move RAM from one computer to another, find out what type of RAM each Mac requires by checking in the Mac Catalog database, at www.zdnet.com/mac/catalog.html

Mac Download
To download the shareware mentioned in this article, go to www.macdownload.com

***Figure 1** · They're small but dangerous. These screws in the PowerBook 500-series Macs can loosen over time, which can result in a cracked PowerBook case.*

Chris: . . . posted advice on preventing this cracking. I'll summarize only briefly, because it's a complex operation (those unaccustomed to ripping into the guts of their computers may wish to take the illin' PowerBook to an authorized repairperson for the necessary tweaks).

The problem involves a couple of screws that come loose over time (see Figure 1) and is peculiar to the PowerBook 500 series. These screws are in the clutch assemblies — the parts that act as hinges for the PowerBook and provide the tension necessary to keep the cover open. When the screws loosen, they cause more pressure on other parts of the PowerBook, and this pressure can lead to a broken cover. To prevent the problem, you must carefully remove a part or two and tighten these screws every six months or so.

Larry lays out the whole situation in a document at www.macintouch.com/pbhinge.html.

PowerBook 500 users equipped with only a Swiss-army knife and more thumbs than the good Lord intended should heed Larry's call to get thy PowerBook to an authorized repair shop.

Array, Down upon the Swanee River

What exactly is RAID?

ZFrechette, via AOL

Chris: It's a pyrethrin-based bug spray made by S. C. Johnson & Sons, Inc.
Bob: Next question.

No, Really

Come on — stop goofing around. What is RAID?

ZFrechette, via AOL

Bob: Persistent cuss, ain't he?
Chris: Sure is. Next question.

I Mean It!

Look, I'm a subscriber, you jerks! What's RAID!?

ZFrechette, via AOL

Chris: OK, OK, OK! Because you're supporting us through your subscription dollars and you asked so nicely, we'll tell you. *RAID* is an acronym for *redundant array of independent disks.* In other words, a RAID or disk array is a collection of separate hard drives that are ganged together to operate as a single, virtual hard drive. When using a RAID, you don't see icons for each one of the disks on the desktop but rather a single icon that represents the array.
Bob: Before we delve further, I'd like to point out that *RAID* used to stand for *redundant array of inexpensive disks.* But the *I* in *RAID* was changed from *inexpensive* to *independent* when several experts — and no, we weren't consulted — concluded that it was oxymoronic, seeing how the disks in RAIDs are not particularly inexpensive.

With that out of the way, let's get serious: The advantage of RAIDs is that they're faster and safer than drives that each have a single disk. That's because in a RAID, the data is split up among multiple disks. The array is faster than a single drive because the drives share the work of reading data. The data is also safer because at least one of the drives holds *parity information,* an extra copy of the original data. If one drive fails, the RAID can rebuild your data from the other drives.
Chris: Oddly enough, the most popular type of RAID for the Mac — RAID Level 0 — isn't a true RAID, because it's not redundant. RAID 0 has all the speed advantages of distributing the work but skips the extra effort of calculating parity information. Since it has extra speed, this is the type of RAID commonly used for desktop video, where speedy data throughput is crucial.
Bob: I still prefer the bug answer.

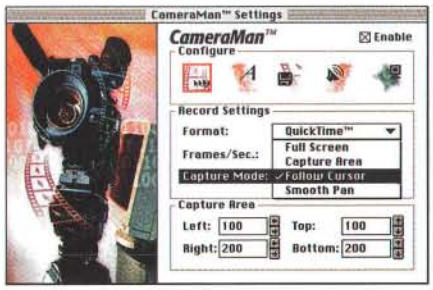

***Figure 2** · Be the star of your Mac's screen. You can make a movie of whatever you do on-screen with MotionWorks' CameraMan software.*

Screen-Shot Movies

Is there a program that can capture the movements I make on my screen and save them as a QuickTime movie?

Andra Sek, via the Internet

Bob: Why, of course, there is. If there weren't, would we be answering your question? It's called CameraMan ($70 estimated street), from MotionWorks (800-565-5582 or 604-685-9975; www.mwg.com).
Chris: Works pretty darn well too. CameraMan is a combination extension/application that gives you a pantsful of options for creating "screen movies" and recording your screen activity as a QuickTime movie (see Figure 2). The package even includes a bare-bones editing appli-

Reader Tip · *Budget Backups*

Free Automated Backup
Bob and Chris discussed a couple of commercial utilities for automated backup in the April '97 issue (page 97), but I have a way to schedule backups that costs no more than a thank you.

Download a copy of Roland Gustafsson's SimpleBackup (it's thankyouware) and *MacUser*'s own T-Minus Ten. Configure SimpleBackup as instructed, and use this AppleScript script to activate the program:

```
tell application "Finder"
activate
select folder "Backup
 Aliases"
open selection
select file "SimpleBackup"
 of folder "Backup Aliases"
open selection
close window of folder
 "Backup Aliases"
end tell
```

Save this script as a compiled AppleScript script, and store it anywhere on your hard disk. Next launch T-Minus Ten, click on the New Task button, and choose the AppleScript script that you've just created. Schedule your backup, and then save. When T-Minus Ten launches your script, your files will be backed up automatically.

Robert Sternberger, via AOL

Photography · Pavlina Eccless

cation — the aptly named QuickEdit — for tweaking the screen movies you capture.

Buk-Buk-Ba-Gack!

I have this cool Super Chicken alert sound on my Mac at home, and I want to put it on my boss's Sun SPARCstation at work. How can I change the sound from Mac format to something that plays on my boss's computer?

Francis Pottery, via the Internet

Chris: Jeez, and people say *we* spend too much time goofing off.
Bob: Francis, as work-at-home types, Chris and I rarely get to participate in office high jinks....
Chris: I sometimes tease the cat....
Bob: Doesn't count. For this reason, we're happy to live vicariously through you — and extra happy because the answer to your question is just a simple download away. Point your browser at just about any Mac-software site (of course, because we know where the butter goes on our bread, we always recommend *MacUser*'s Mac Download), and download Norman Franke's totally free SoundApp. The latest version (SoundApp 2.2.2 when we last checked) lets you easily convert more kinds of sounds than you can wave a baton at.

Turning a System 7 sound into a Sun-compatible, µ-Law-encoded .au file is the work of a moment. Just select Convert from the File menu, pick the sound file you want to change, and select the WWW .au setting from the pull-down menu. Your newly converted sound file is now in the SoundApp Converted *f* folder, which is inside the folder where the original sound file lives.
Chris: Once you've converted the file, you're halfway there, but you still have to get it onto your boss's computer. The easiest way to do so is to e-mail the sound file to yourself at work — assuming that you have a SPARCstation as well. If you want to compress the file before mailing it, be sure to uuencode it — UNIX doesn't dig StuffIt and often coughs at BinHex too. After you've downloaded it at the office, it's a simple matter to send it to your boss across the network.

If your intent is to surprise the boss by surreptitiously sneaking the sound onto your Lord and Master's machine, we suggest that you contact a Sun-system pro to find out how...
Bob and Chris, in unison: ... 'cause we don't do UNIX!

Bob LeVitus is the author of Mac OS 8 for Dummies *and is the Mac columnist for the* Houston Chronicle. *Christopher Breen recently coauthored* The Macintosh Bible Guide to Games *and is a* MacUser *contributing editor.*

Reader Tip · *Word Shortcut*

Faster Global Changes in Word

If you need to change a word that occurs many times in a document — you need to update the name of a product or company, for instance — here's a macro that will do the changing for you:

Type the current name in your document, and select it. Choose AutoText from the Edit menu, and in the name field, enter a generic name, such as prodname, for this entry. Click on the Add button. Now create this macro, and call it something like insertprodname:

```
Sub MAIN
InsertField .Field =
 "AUTOTEXT prodname \ *
 MERGEFORMAT"
End Sub
```

Save this script as a compiled AppleScript script, and store it on your hard disk. If the name changes later — from Acme Widget to Supra Deluxe, for example — simply change the AutoText entry by deleting the old entry, typing the new name in the document, selecting it, and again choosing AutoText. Type the same generic name (prodname), and click on Add. Update all the fields by selecting the entire document (Command-A) and pressing F9 or Command-Option-Shift-U.

Gregory Wasson
MacUser contributing editor

Reader Tip · *Internet Connection*

Easier PPP Connect

When you install Mac OS 7.6, Apple places a folder called Open Transport/PPP on your hard disk. Inside this folder is an AppleScript script that lets you fire up your PPP connection easily. Unfortunately, it also asks for your user name and password — information unnecessary if you already have it embedded in a connection script. Here's an AppleScript script that will make sure your Mac never asks you for this unnecessary info again:

```
copy (PPP status) to pppStatus
copy (get state of pppStatus) to pppState

if pppState is "idle" then
      copy the button returned of (display dialog "PPP is currently idle." buttons {"Open
PPP Connection", "Cancel"} default button 1 with icon 1) to user_choice
      if user_choice contains "Open" then
            try
                  PPP connect
            on error
                  display dialog "Oops! Couldn't start PPP." buttons {"OK"} default
button 1 with icon 2
            end try
      end if
      if user_choice is "Cancel" then quit
end if
```

Brian Beeler, via the Internet

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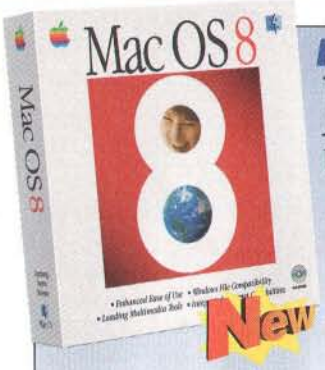

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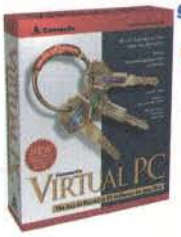

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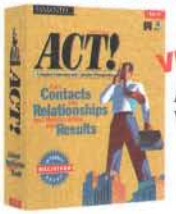

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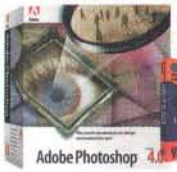

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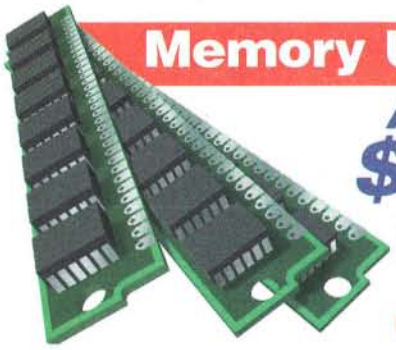

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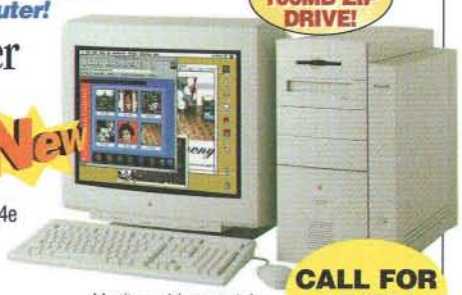

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4400/200	603e/200MHz	32MB/160MB	2GB IDE	2MB	256K	12X	2	#78171	$1799	$72	$159.98
7300/180	604e/180MHz	16MB/512MB	2.0GB	2MB	256k	12x	3	#80897	$2099	$84	$189.98
9600/233	604e/233MHz	32MB/768MB	4.0GB	4MB	512k	12x	6	#80887	$3499	$140	$259.98
Apple PowerBook Model	**Processor**	**RAM Standard/Max**	**Hard Drive**	**VRAM Std.**	**L2 Cache**	**CD-ROM Drive**	**PCI Slots**	**Item**	**Only**	**Lease[1]**	**4-year Ext. Service***
2400	603e/180MHz	16MB/48MB	1.3GB IDE	1MB	256K	–	–	#74700	$3499	$140	$259.98
Umax SuperMac Series Model	**Processor**	**RAM Standard/Max**	**Hard Drive**	**VRAM Std.**	**L2 Cache**	**CD-ROM Drive**	**PCI Slots**	**Item**	**Only**	**Lease[1]**	**4-year Ext. Service***
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C500LT/180	603e/180MHz	16MB/144MB	1.2GB IDE	1MB	256K	8X	2	#74711	$945	–	$129.98
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S900/180dp	Dual 604e/180MHz	32MB/1GB	2.1GB SCSI	4MB	512K	8X	6	#90934	$3295	$132	$259.98
Motorola StarMax Series Model	**Processor**	**RAM Standard/Max**	**Hard Drive**	**VRAM Std.**	**L2 Cache**	**CD-ROM Drive**	**PCI Slots**	**Item**	**Only**	**Lease[1]**	**4-year Ext. Service***
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3000/240MT-6S	603e/240MHz	32MB/160MB	2.5GB	4MB	512K	8X	5	#78188	$2250	$90	$189.98
4000/160MT-6S	604e/160MHz	32MB/160MB	2.5GB	2MB	512K	8X	5	#78190	$1895	$76	$159.98
4000/200MT-6S	604e/200MHz	32MB/160MB	2.5GB	2MB	512K	8X	5	#78191	$2895	$116	$189.98
PowerCenter Pro Series Model	**Processor**	**RAM Standard/Max**	**Hard Drive**	**VRAM Std.**	**L2 Cache**	**CD-ROM Drive**	**PCI Slots**	**Item**	**Only**	**Lease[1]**	**4-year Ext. Service***
180 MT	604e/180MHz	16MB/512MB	2.0GB	2MB	1MB	16X	3	#75635	$2095	$84	$189.98
210 MT	604e/210MHz	16MB/512MB	2.0GB	2MB	1MB	16X	3	#75639	$2495	$100	$189.98
PowerTower Pro Series Model	**Processor**	**RAM Standard/Max**	**Hard Drive**	**VRAM Std.**	**L2 Cache**	**CD-ROM Drive**	**PCI Slots**	**Item**	**Only**	**Lease[1]**	**4-year Ext. Service***
225**	604e/225MHz	128MB/1024MB	2.0GB	8MB	1MB	8X	6	#75637	$3495	$140	$259.98
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- 2.5GB Hard Drive
- 8X Internal CD-Rom Drive
- Motorola 28.8 Data/fax Modem

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$2200
Starmax 3000/240 w/28.8 Modem
- Minitower w/PowerPC 603e Processor
- 240MHz Speed
- 32MB RAM expandable to 160MB
- 512k L2 Cache
- 4MB V-RAM
- 2.5GB Hard Drive
- 8X Internal CD-Rom Drive
- Motorola 28.8 Data/fax Modem

Monitor Sold Separately

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- Minitower w/PowerPC 603e Processor
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- 256k L2 Cache
- 1MB V-RAM expandable to 4MB
- 2.5GB Hard Drive
- 8X Internal CD-Rom Drive
- Motorola 28.8 Data/fax Modem

$1726
Starmax 3000/200 w/28.8 Modem
- Minitower w/PowerPC 603e Processor
- 200MHz Speed
- 32MB RAM expandable to 160MB
- 256k L2 Cache
- 1MB V-RAM upgradable to 4MB
- 2.5GB Hard Drive
- 8X Internal CD-Rom Drive
- Motorola 28.8 Data/fax Modem

$2426
Starmax 4000/200
- Minitower w/PowerPC 604e Processor
- 200MHz Speed
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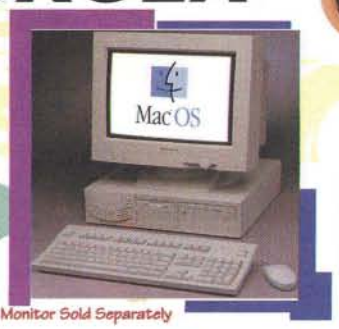
- 512k L2 Cache
- 2MB V-RAM upgradable to 4MB
- 2.5GB Hard Drive
- 8X Internal CD-Rom Drive
- Five PCI Expansion Slots



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- 8X Internal CD-Rom Drive
- Three PCI Expansion Slots

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Starmax 4000/160
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- 512k L2 Cache
- 2MB V-RAM upgradable to 4MB
- 1.2GB Hard Drive
- 8X Internal CD-Rom Drive
- Three PCI Expansion Slots

$1526
Starmax 3000/200 w/28.8 Modem
- Desktop w/PowerPC 603e Processor
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- 256k L2 Cache
- 1MB V-RAM upgradable to 4MB
- 1.2GB Hard Drive
- 8X Internal CD-Rom Drive
- Motorola 28.8 Data/fax Modem

$1299
Starmax 3000/180 w/28.8 Modem
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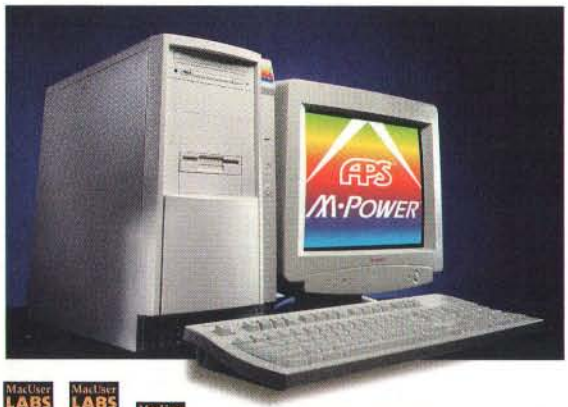

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Hard Drive	✔ 2.5GB	2GB
Internal CD-Rom	✔ 16X	12X
RAM	✔ 32MB	✔ 32MB
Cache	✔ 512K level 2	256K level 2
VRAM	✔ 2MB	✔ 2MB
Monitor	✔ 15" Philips/Magnavox display	None
FREE Software	✔ Yes ($1000)	Limited
Warranty	✔ 2 yr. limited	1 yr. limited
Price	✔ $2,180	$2,399

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- 32MB DRAM
- 512K L2 cache
- 15" Philips/Magnavox display

$2180

M•POWER 603e200

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- 16MB DRAM
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APS Q 9000	Quantum Atlas II, 8682MB, 7200 rpm	1299.95	1369.95	1399.95
APS ST 9000	Seagate Barracuda, 8600MB, 7200 rpm	CALL	1499.95	1529.95
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APS ST 4500 W	Seagate Cheetah, 4348MB, 10000 rpm	N/A	N/A	1249.95
APS Q 9000 W	Quantum Atlas II, 8682MB, 7200 rpm	1349.95	1419.95	1449.95
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Model	Description	Int.	SR 1000	SR 2000
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Model	Description	Int.	SR 1000	SR 2000
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APS CD-R	2X record/6X read CD-R (Phillips)	499.95
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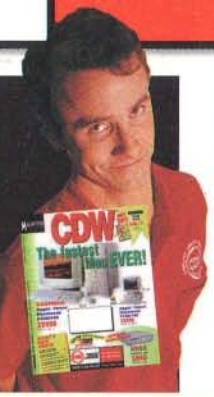

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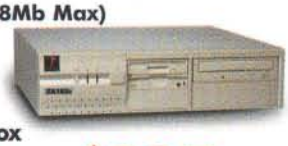

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4.5GB Atlas II	QM34550ALW	8ms	UltraWide SCSI-3	7200	$799	$879
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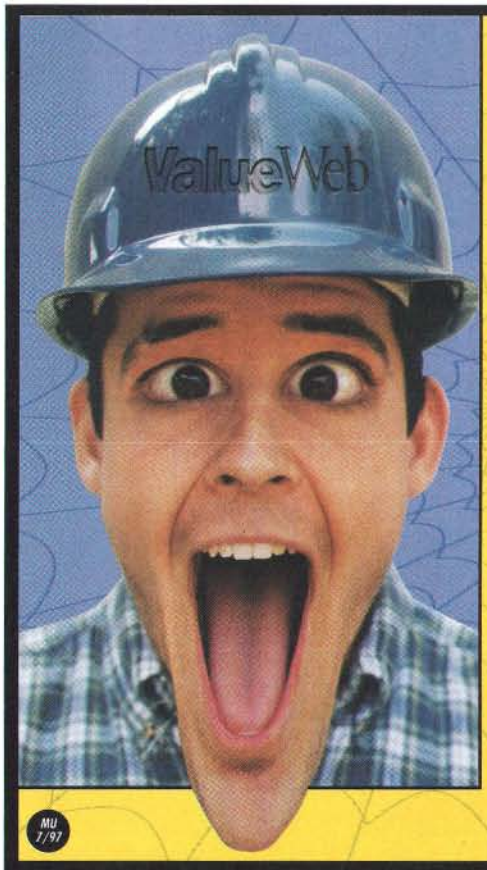

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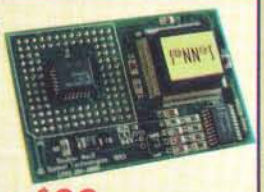

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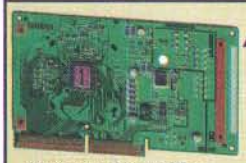

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3.2GB	Stratus	5400 10ms	$354	$394
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4.5GB	Atlas2	7200 8ms	$699	$744

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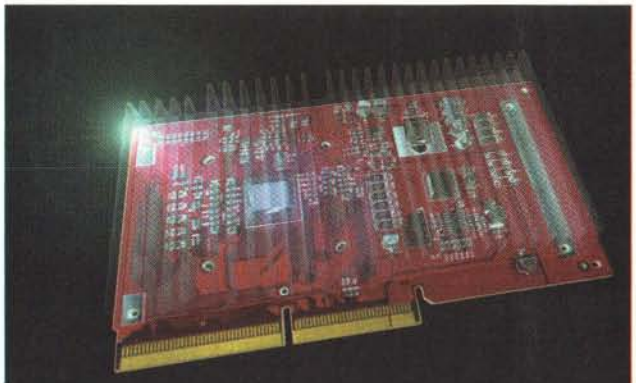

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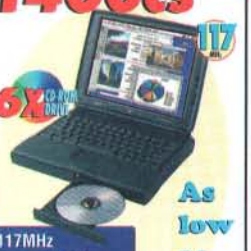

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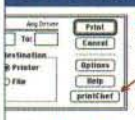

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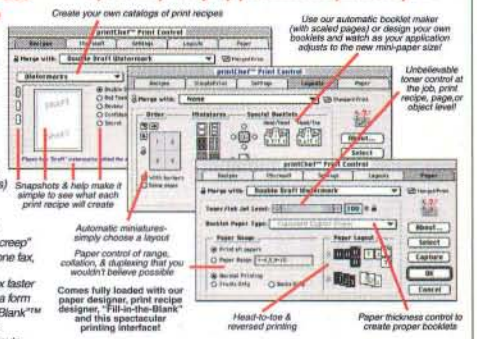

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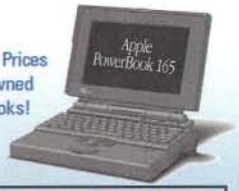

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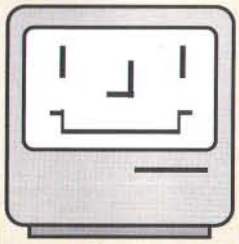

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By Roman Loyola
maxuser@macuser.com

The Ultimate Gaming Mac

Here's the right Mac setup for the best gaming experience.

After a fast and furious Marathon session, my friends and I were sitting around talking smack, bantering with each other about our best kills. The most popular excuse for a player's lame performance was the Mac setup: "Well, you have a UMAX S900/250, and I have only a Power Mac 7100/66AV. That's not fair."

The only way to level the playing field — and to shut everyone up — is to get everyone the same Mac setup, which segues into another argument: What is the best Mac setup for games? The one we came up with isn't the most affordable system; instead, it's one in which you pay for what you get — great quality. If you're interested in the very best that money can buy (in other words, the Supreme Gaming Mac), see the "To the Victor" sidebar.

The Center of Power

The Power Computing PowerCenter Pro 210 is an ideal game machine. It's got a fast, upgradable 210-MHz PowerPC 604e processor; a 60-MHz data bus (handy when it's time to upgrade the processor); a 16x CD-ROM drive; and onboard 3-D graphics. Since you can customize the CPU when you order from Power Computing, be sure to add 48 MB of RAM, a 1-MB L2 cache, a 4-GB internal hard drive, an Asanté 10/100BASE-T Ethernet card, and 4 MB of graphics DRAM. And because your collection of maps for Marathon, Doom, and Duke Nukem will take up hundreds of megabytes of space on your hard disk, get an internal Iomega Zip drive. Also, get the tower form factor of the PowerCenter Pro, since it comes with an extra bay — you'll need the bay for a DVD-ROM drive in the future. Total price: $3,238 (direct).

Listen Up

Whatever you do, don't settle for a multimedia monitor. Although they're great space savers, you'll be sacrificing sound quality. To get the best sound and to experience the full effect of 3-D sound, you need a separate, subwoofer-based speaker set. The Cambridge SoundWorks MicroWorks speakers ($349 list) produce the best sound we've heard from a set of multimedia speakers. The two satellite speakers that sit on your desktop are tiny — 4 x 4 x 3.63 inches. The subwoofer is huge — 17.5 x 9 x 8 inches — but fortunately, it sits under your desk.

When your housemates start to complain that your living space sounds more like a John Woo movie than like a home, you may need to play in silence. Don't mute your Mac; simply get a quality set of headphones. There are hundreds of headphones out there, so recommending one pair is difficult. Look for good bass response, a comfortable fit, and adequate length for the headphone cable. Also, if it's important to hear sounds outside of the headphones (for instance, those coming from your computer), get a pair that doesn't fully isolate outside noise.

Diamond Brilliance

The monitor we recommend for the ultimate game experience is the Mitsubishi Diamond Pro 87TXM ($749 list). This 17-inch monitor not only looks great but also comes with software for fine-tuning the monitor's screen.

Photography · Adrian Ordenana

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Cupertino, CA
408-446-8693
www.satusa.com

ThrustMasters
Hillsboro, OR
503-615-3200
www.thrustmaster.com

Get Control

The debate over which set of game controls is best gets heated. Many swear by the new Microsoft SideWinder joystick ($80 estimated street), but others — especially lefties — love CH Products' FlightStick Pro ($80 estimated street). In either case, you're going to get a solid joystick.

If you're into flight simulators, you'll want three other pieces of equipment, from ThrustMasters — the Flight Control System Joystick ($100 estimated street), the Weapons Control System throttle ($75 estimated street), and the Rudder Control System ($115 estimated street).

In some cases, a Nintendo-like game pad is better than a joystick, keyboard, or mouse. CH Products' GamePad for Mac ($29 list) fills the bill perfectly.

Venture into CyberSpace

The key to having a good time while playing a game on the Internet is to have a fast connection — the faster, the better, because the speed of your connection can directly affect how well you perform. If you have any pride at all, you're not going to settle for traditional fast-modem speed. No, in order to preserve your honor on the Internet, you must invest in ISDN.

Fortunately, ISDN costs have come down recently; initial installation fees range from $75 to $250, depending on such variables as where you live and whether you need to install a second phone line. Your monthly costs for an ISP (Internet Service Provider) can range from $40 to $75. When it comes to an ISDN modem, check out the Sagem Planet ISDN GeoPort Adapter ($395 list). It lacks some of the advanced features of other ISDN modems, but it's one of the easier ones to set up and it works well.

Fully Accessorized

The Mac doesn't have the overflowing library of games Wintel users enjoy, but with Orange Micro's Model 540 PC-emulation card ($2,117 list), you can play any PC game on your Mac. This card has a 200-MHz MMX Pentium chip with 16 MB of RAM. Be aware that it won't necessarily run games as fast as a dedicated PC could (the card isn't your motherboard, after all). You'll need to buy Windows software separately.

If you're using your Mac and the power goes out in the neighborhood, it could put a serious cramp in your game and possibly damage your Mac. With the APC Back-UPS Office ($200 estimated street), you get a temporary battery-backup power source so you can continue gaming while everyone else is searching for flashlights and candles. The Back-UPS Office also acts as a surge protector.

For gaming on the road, you'll want Apple's PowerBook 3400c/180 ($4,499 list). The 3400c/180 has a 180-MHz PowerPC 603e processor, 16 MB of RAM, a 1.3-GB hard drive, a 12x CD-ROM drive, a 33.6-kbps modem, and a 12.1-inch active-matrix screen. It also has a built-in subwoofer audio subsystem. You may want to bring along headphones, though, so you don't disturb your neighbors on those long flights.

According to Associate Editor Roman Loyola, he never needs to make excuses for a poor Marathon outing because he's never had one.

To the Victor *An exercise in excess*

Your rich uncle died and left you a healthy sum, your new Platinum Visa just came in the mail, or maybe you've just won the lottery. Now you can buy that game setup you've always wanted. Here's our idea of the *supreme* gaming Mac if money is no object.

- Power Computing PowerTower Pro 250 — It has a 250-MHz PowerPC 604e processor, 128 MB of RAM, and a 1-MB L2 cache. It also comes with a 2-GB hard drive, a 16x CD-ROM drive, and an IMS TwinTurbo graphics card with 8 MB of VRAM ($4,655 list; 800-999-7279).
- Mitsubishi Diamond Pro 91TXM 21-inch monitor — one of the best monitors available ($1,649 list; 800-843-2515 or 714-236-6352).
- In Focus LitePro 720 — a multimedia projector that will give you wall-sized images of your games ($9,500 list; 800-294-6400 or 503-685-8888).
- ATI Xclaim VR 4M — a second graphics card to run the projector ($299 list; 905-882-2600).
- ATI Xclaim TV tuner — turns your setup into an entertainment center as well as a game station ($99 list).
- MicroNet DataDock 18GB Ultra Wide RAID Array — to get top speed ($6,814 list; 714-453-6100).
- Kenwood THX-certified audio/video system — a complete, high-quality sound system that comes with a KR-X1000 THX audio/video receiver, a KM-X1000 Power Amplifier, LS-X1F LCR Speakers, and LS-X1S THX Surround Speakers ($4,700 list; 800-536-9663 or 310-639-9000).
- ThrustMasters Flight Control System Joystick ($100 estimated street; 503-615-3200).
- ThrustMasters Weapons Control System throttle ($75 estimated street).
- ThrustMasters Rudder Control System ($115 estimated street).
- ThrustMasters Formula T2 Racing Wheel and Pedals ($120 estimated street).
- CH Products GamePad for Mac ($29 list; 800-624-5804).
- Logitech Cordless MouseMan ($70 estimated street; 800-231-7717 or 510-795-8500).
- T1 connection — for speedy online gaming (approximately $1,000 per month).
- DVD-ROM drive, when they're available.
- Orange Micro Model 540 PC-emulation card with 32 MB of RAM, a 200-MHz Pentium MMX processor, and Windows 95 — lets you play the best of the PC games on your Mac ($2,257 list; 714-779-2772).

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The Creatures Newsgroup
Chat and exchange Norns with other Creatures parents at alt.games.creatures

By Roman Loyola

gameroom@macuser.com

The Game Room

The world's most popular sport, artificial life, and a *Star Wars* parody

VR Soccer 3D

♦♦♦

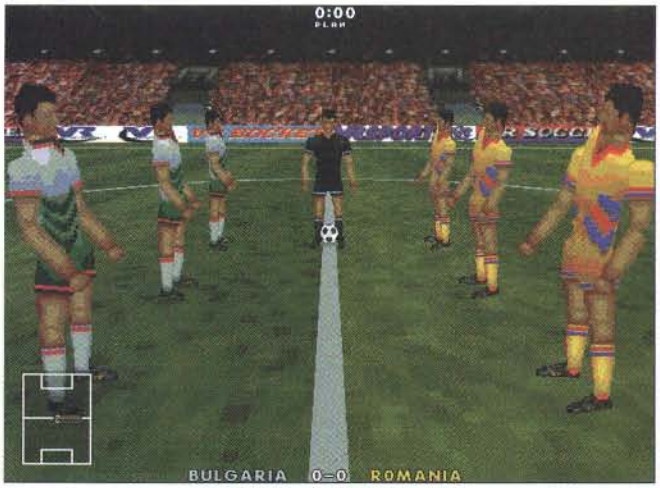
$45 *(estimated street)*
MacPlay, Irvine, CA
800-462-2752 or 714-553-3521
www.macplay.com
Reader service: circle #429

My hands trembled as I slipped the VR Soccer 3D CD-ROM into my drive; my legs shook with excitement as I installed the software. Not only are sport games probably my favorite type of computer game but soccer is my favorite sport. I expected satisfaction from this game. I kind of got it.

Two major components of this game disappoint: the controls and the point of view. The controls are extremely hard to get used to, and playing the game with a keyboard or a mouse is frustrating. It's a good idea to invest in a keypad or joystick if you buy this game. The view of the field is also frustrating. I never found an adequate one. Each camera view is either too close or too far away.

The game also falls short in an area that makes computerized sport games either great or so-so — replication of the feel of the real game. This one doesn't come close enough to making you feel like you're on the field. Dribbling (controlling the ball with your feet) doesn't seem natural; instead, you and the ball look as though you're gliding along the field. It's also too easy to find the computer's weaknesses — a common problem with computerized sport games.

Despite its disappointments, I enjoyed VR Soccer 3D. It has constant action, good-looking polygon-based graphics, and smooth animation. It supports two-player games as well as network play.



Creatures

♦♦♦½

$40 *(estimated street)*
Mindscape Entertainment
Novato, CA
800-234-3088 or 415-897-9900
www.mindscapegames.com
Reader service: circle #430

Creatures is one of the most innovative games available. That's mostly due to the fact that it's based on artificial life (AL), a technology few games have. Even though the AL in this game is primitive, your actions have a real effect on what a character learns and how it acts.

Just as a parent teaches a child, you need to teach Norns (small, furry creatures) how to communicate, eat, and interact with other Norns. The Norns learn from your positive and negative feedback. If a Norn does what you want, you tickle it; if it misbehaves, you gently spank it. You get to see the Norns go through adolescence, adulthood, old age, and death.

Creatures is highly engaging. You invest so much time trying to properly — or improperly (if you prefer) — raise your Norns that you can get attached to them. You can also exchange Norns with other Creatures users via the Internet.

Although the implementation of the Norn world and the lessons is well done, the interface needs improvement. One problem is that it's all too easy to spank a Norn when what you mean to do is tickle it. That's because you have to position the cursor in just the right spot, yet the Norn moves a lot. Another problem is that even though it's important to keep an eye on the Norn at all times, you lose sight of it because of a flaw in the interface — scrolling around on the screen is too difficult.

This is also a memory-hungry game. Be prepared to give it 16 MB of RAM.

Star Warped

♦♦♦

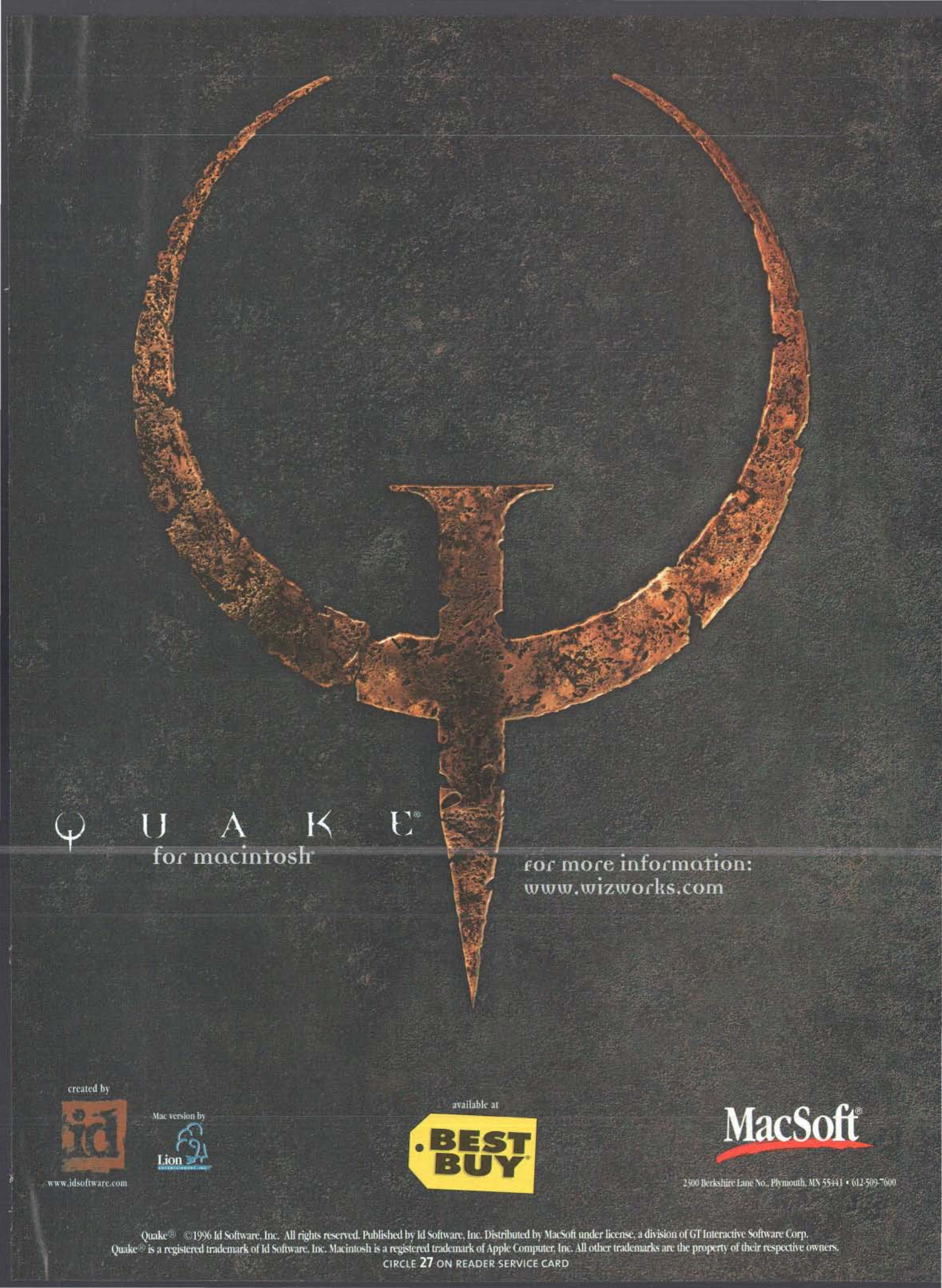
$20 *(estimated street)*
Palladium Interactive, Larkspur, CA
800-910-2696 or 415-464-5500
www.palladium.net
Reader service: circle #431

This *Star Wars* parody relies on overused humor, but its saving grace is that a lot is packed onto this inexpensive CD-ROM.

The jokes are aplenty in Star Warped, but more of them miss than hit. The game hosts — two *Star Wars* fanatics — take you through a series of games, calling you such names as *Nerfherder,* making fun of your prowess with the Force, and talking like two dudes from the Valley. Mix it all together, and you have a couple of annoying characters trying too hard to be endearing.

There's a lot to do on this CD-ROM. Many of the games it contains are parodies of other games, such as U Don't No Jedi, a take-off on You Don't Know Jack, and Whack the Ewok, a parody of the Whack-a-Mole amusement-park game (and a welcome chance to pound on the overly cute creatures). The disc's best feature is the section of re-creations of *Star Wars* scenes, letting you see interpretations of scenes as directors such as Spike Lee and Quentin Tarantino might have created them. The disc contains so many different activities that you can get hours of entertainment, even if you don't like most of the humor.

Associate Editor Roman Loyola was a goalkeeper on his high-school soccer team but soon realized that playing sports video games was less tiring.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CIRCLE 27 ON READER SERVICE CARD

Andy Ihnatko

Tamagotchi-mania!
Learn more about Andy's virtual pet peeve at www.bandai.com

Ihnatko Uncensored!
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Andy at the Expo
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By Andy Ihnatko
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Beep Beep, It's Dead

If there's a cyberpet heaven, they've got a helluva bandwidth

Buying a Tamagotchi obviously was not going to turn out to be the incredible lifestyle enhancement that reports on the CNN Web site had claimed. But I had fallen into the age-old consumer-as-marketing-victim trap: Don't think! Look! It's electronic! It beeps at you, and it's cute!

I'd signed up right away. Tamagotchi is an entirely new class of electronic game, one you play not for a couple of hours or even a couple of days, but ideally for an entire month. It's a little electronic egg on a key chain, featuring an LCD panel and three buttons. Once you take the egg out of the box and pull the pin, an electronic pet "hatches" and it's your responsibility to nurture the little bastard until it either grows up and flies away or dies.

Every time the "pet" is hungry and needs to be fed, or has pooped and needs to be cleaned up, or is bored and needs to be played with, it beeps at you.

After a couple of days of this, playing to lose becomes an attractive option. Especially when you see how bad the documentation is on this thing. My Tamagotchi (actually a rip-off "Nano Baby," since the only way to get your hands on an actual Tamagotchi [™ and © Bandai 1996, 1997] is to hang around outside a junior high and find a student willing to trade his for a carton of smokes) had awful documentation. It explained what the little silk-screened icons stood for, but then the Nano Baby would pull weird things on me. Baby would be crawling around as usual, but in a corner of the screen there'd appear a morose smiley face that would occasionally glance upward. The fact that the Nano Baby died about an hour after the face appeared makes me think it was an important sign, somehow.

I mean, hey, if I wanted to spend all day nervously reacting to purposely vague signals, knowing that as soon as I misinterpreted one, boom, instant death, I'd still be dating that performance artist. Which is why about a week after I bought little "O" — I'd intended to name it Oprah, but the button I thought meant "Select the next letter" turned out to mean "Baptize it!" — I took it apart, threaded the pin back in, and gave it to a friend of mine, who was thrilled beyond words to get it but wound up passing it on to someone else a week later.

See, the big kicker is that I ought to have known better. I've been *through* the Tamagotchi experience before. I *used* to have a pager. Again, I had been seduced by the Advertising. Electronic. Beeps *and* vibrates. Like the Tamagotchi, it was a little beeping plastic pal with an LCD panel. A pal that demanded constant attention and affection. Which for $15 a month kept me constantly accessible to other humans requiring attention and affection. Humans who simply don't *understand* that for the purposes of making a deadline, spending a day at the beach contemplating the Atlantic next to a cooler of Dr. Peppers is every bit as vital as actually being at home answering phone calls and writing.

Worse, of course, is the $7,000 Tamagotchi here, my Power Mac system. It demands to be fed newer and more improbable iterations of system software every week. It needs to be played with, and like a cocker spaniel with your left sneaker, it thinks it's fun to grab an important file from the folder where you're sure you left it and make you chase it all over your SCSI chain. Most sadistic of all is this flashing cursor, here. WRITE, it says. WRITE. WRITE. WRITE. COME ON. I'M WAITING. YOU KNOW, THERE ARE *OTHER* THINGS YOU COULD BE NOT WRITING ON THAT DIDN'T COST A THOUSANDTH AS MUCH AS I DID. WRITE! *WRITE!!!*

Of course, some mistakes are so enormous and so obvious that you're pretty much committed to repeating them over and over again (like the past four seasons of *Saturday Night Live*), and when I had an opportunity to buy a *real* Tamagotchi (™ and © Bandai 1996, 1997), I was $18 poorer before I really knew what I was doing. It's a real step up from the Nano Baby. The "pet" is an order of magnitude cuter, for one, and it's better documented. Also, when you discipline it, it throws a genuine fit, which, of course, is half the fun. But now I'm in Day 4, and my Tamagotchi has evolved into something that looks like a duck's head equipped with a flagellum for locomotion. My friend has already launched a preemptive refusal to adopt it, so really the only humane alternative is to take it into the sunny part of the driveway and slowly melt it with a big photocopier lens.

No, the Tamagotchis were dumb ideas. Besides, I already have Click and Drag, my goldfish, Nature's Most Perfect Pets. Every morning, I turn the lights on in their MacQuarium, say "Hello, boys!", and dump in some food pellets. Every evening, it's "How's it goin', guys?", more food, and lights out. I respect the fishes' boundaries, and they respect mine. And they never beep at me while I'm in a theater trying to concentrate on hating *Batman and Robin.*

Illustration · Jack Mortensbak

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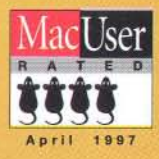

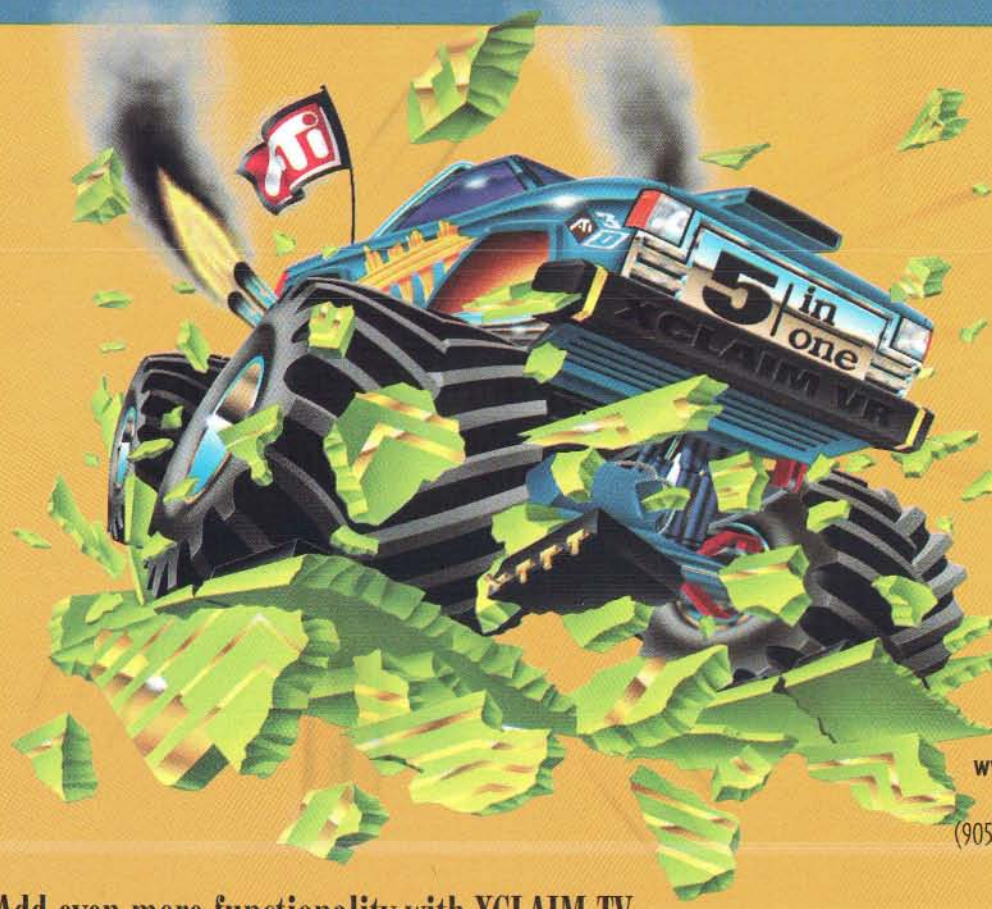

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